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A GUIDE FOR

*Planning
and
Equipping*

SCHOOL LUNCHROOMS

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
WASH. D.C.

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PREFACE

This publication is designed to serve as a guide for State school lunch agencies and others concerned with the planning and equipping of new school lunchrooms or the remodeling of existing facilities.

Work in this field was undertaken by the U. S. Department of Agriculture upon the recommendation of a representative group of State School Lunch Directors who serve as advisors to the Department on school lunch technical assistance activities.

Adequate facilities are essential to the operation of a good school lunch program. With new school construction rapidly expanding, these advisors felt that there was an urgent need to bring together, in practical and usable form, the best available information on efficient school lunch facilities and equipment.

The booklet presents information in the form of general guides, capable of being adapted to specific local situations and needs. It provides information on location, space, construction features, and equipment for all lunchroom areas and is based upon the service of lunches meeting the Type A standard.

For each lunchroom area, equipment needs are listed for four different meal loads, ranging from 100 to 750 lunches per day. Lunchrooms serving fewer than 100 or more than 750 lunches daily present specialized prob-

lems that are beyond the scope of this publication, although the same basic principles should be applied. For the same reason, the design of central food preparation facilities is not considered in this guide.

For many areas of school lunch equipment and facilities, there is no commonly accepted standard of minimum essential needs. The guides recommended in this publication are a consensus. Equipment recommendations have been checked against the quantities of food required to prepare Type A lunches, allowing a margin for needed variety in menu planning. Area and space recommendations have been checked to insure that they permit efficient arrangement of recommended essential equipment.

The materials included in the publication have been drawn from many sources, and the advice and counsel of school feeding specialists were sought by the Department in the development of the final recommendations. While the large number of contributors makes it impossible to list them individually, the Department wishes to acknowledge the extent and importance of their contributions.

Supersedes PA No. 60,
"Planning and Equipping School Lunchrooms."

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A GUIDE FOR PLANNING AND EQUIPPING SCHOOL LUNCHROOMS

BASIC PRINCIPLES

Importance of Good Planning

The National School Lunch Program is designed to improve the health of schoolchildren and to broaden food markets by assisting States to expand and improve the service of well-balanced lunches at school. Good planning and equipping of school lunchrooms is essential to attaining these objectives.

With many schools improving their school lunch facilities and many more schools being built, proper planning and equipping is a matter of concern to many. The complexity of building construction, the technical details of specifications and contractual procedures require competent professional assistance. The combined efforts of architects, consulting engineers, equipment specialists, sanitarians, and the State and local school lunch supervisory staff should assure a school lunch facility that will be useful for many years.

Points To Consider

SPACE REQUIREMENTS: Allow ample space to provide for a high percentage of school lunch participation by the student body and for expansion of the school building. If the lunchroom is to be used for adult group meetings and other school-community activities, allow space for accessory items that may be needed.

CLASSIFICATION OF SCHOOL: Consider what age groups will be attending school: elementary, junior high, senior high, or a combination of two or all classes of schoolchildren.

CORRELATION OF THE SCHOOL PLANT: The pattern of the entire school building determines the location and best arrangement of the school lunchroom.

SCHOOL'S ADMINISTRATIVE POLICY: The capacity of the dining room depends upon the length of the serving period. If school policy limits the lunch period to a short time, then more

dining space and serving equipment are required than if the lunch is served to groups coming at different times, thus permitting the reuse of seating space and longer use of serving equipment.

AVAILABILITY OF UTILITIES AND SERVICES: Determine whether public utilities—gas, electricity, water, and sewers—are available, or whether private utilities are necessary. Consider location—rural or urban—and whether the school gets quick, frequent deliveries of supplies and services, or is located away from such facilities.

SELECTION OF SCHOOL LUNCH FACILITIES: Select each feature of the school lunchroom on its own merit for school food service, not because of its use in commercial restaurants or other public institutions.

DURABILITY OF MATERIALS: To get maximum returns for money expended, the school lunchroom should be planned to be useful without major remodeling for many years. It should be functional and durable, and should not require major repairs or replacement expenses.

SANITATION: Lunchroom construction and equipment should be sanitary and easy to keep clean, not harboring rodents, vermin, or infection. Equipment should include sanitizing devices for washing and sterilizing all dinnerware and utensils. Sanitary storage facilities for dry foods and perishable products are also essential.

ENVIRONMENT: Consider cleanliness, good lighting, cheerful colors, good ventilation, and noise control. Consider also the possibility of connecting the inter-communication system of the school with the lunchroom and of providing space for bulletin boards and educational exhibits. These all lend attractiveness to the school lunchroom and develop pride of the employees, students, and community in their school lunchroom.

In addition to these basic principles, more detailed guides are needed for planning and equipping any school lunchroom. The following pages set forth guides for location, space, and features of construction, and give suggested lists of equipment for meal loads of various sizes.

Stock kitchen plans are not flexible enough to fit over-all school plans and therefore have been omitted from this publication. In using the guides presented, remember that each school lunch program is an individual problem and that the information given here should be adapted to your local situation.

RECEIVING AREA

PURPOSE----- An outside loading platform and a receiving area inside the building are needed: To facilitate handling of food and to protect it from the elements during the course of unloading; to provide temporary storage until deliveries are checked for quality, weight, and count; and to facilitate disposal of trash and garbage. (See Maintenance Area, page 49.)

Outside Loading Platform

LOCATION----- On ground floor level, near service driveway, adjacent to storeroom and kitchen, and away from playgrounds and student traffic. (See Figure 1, page 9.)

SPACE----- Will vary depending on delivery service, volume of deliveries, etc. For width, allow at least 6 ft. from front to back.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
60 sq. ft.	60 sq. ft.	80-100 sq. ft.	100-160 sq. ft.

CONSTRUCTION FEATURES----- Consult State and local authorities having jurisdiction over applicable regulations.

Floor----- Concrete with integral hardener, slip-resistant. Heavy steel angle iron to reinforce edge; wood bumper optional. At same level as entrance to inside receiving area; avoid ramp or steps from platform into building. Proper drainage essential.

Lighting and wiring----- Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Minimum, 150- to 200-watt lighting unit; weatherproof type if platform is unprotected.

Other considerations----- Roof extending over entire platform is desirable; must be high enough to clear any delivery truck, generally 12 ft. 6 in. Steps with handrail from platform to driveway level.

Receiving Area Inside Building

LOCATION----- Adjoining loading platform. Separate from kitchen and storeroom, if possible. May serve as vestibule. (See Figure 2, page 9.)

SPACE..... Will vary depending on frequency and volume of deliveries, and time required for checking and storage. Net usable space, exclusive of traffic aisles:

Total Lunches Served Daily

100-200	200-350	350-500	500-750
32-48 sq. ft.	48-60 sq. ft.	48-60 sq. ft.	60-80 sq. ft.

CONSTRUCTION FEATURES..... Consult State and local authorities having jurisdiction over applicable regulations.

Floor..... Slip-resistant; terrazzo, quarry tile, or concrete with integral hardener. Check local regulations regarding floor drains.

Walls and ceiling..... Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile most desirable; painted plaster or masonry acceptable; plasterboard or wood not desirable because not vermin-proof; coved bases at floor line. Local regulations may require coved vertical corners.

Doors..... Heavy-duty doors between outside loading platform and receiving area inside building. Clear opening, minimum 3 ft. 4 in. wide. Self-closing and locking devices. Kick plate on both sides of door at least 6 in. high.

Windows..... Need determined by State and local regulations. If provided, avoid interference with equipment.

Lighting and wiring..... Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Minimum, 15 foot-candles; normally achieved by about 2 watts per sq. ft. of floor area.

Other considerations..... Check local regulations regarding fly and pest control, i. e. screened doors, blow-down fans, etc.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
A built-in stand up desk or shelf, 12 in. by 18 in. by 42 in. high may be preferable.			
1	1	1	1

EQUIPMENT:

Clip board for checking in supplies.....

Scales: Portable floor model; automatic indicating and beam-types available; minimum 400 lb. capacity; $\frac{1}{4}$ to $\frac{1}{2}$ lb. graduations.

EQUIPMENT—Continued

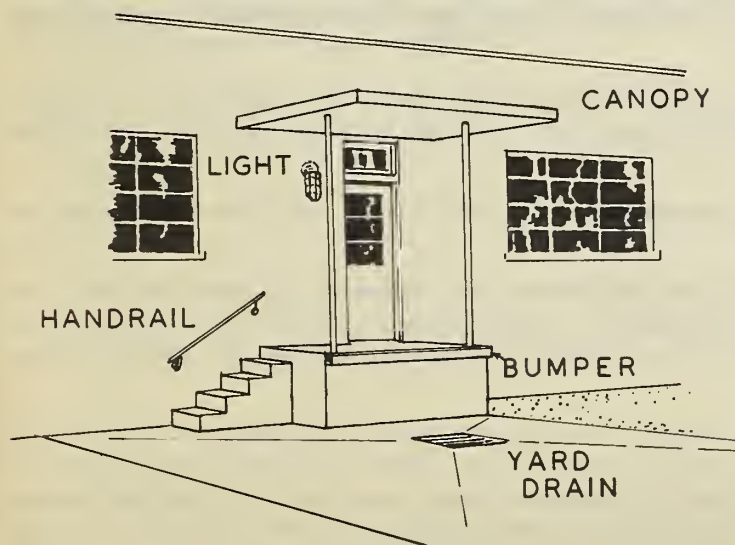
Table: Heavy metal frame; on casters; top of metal, or of dense-grained hardwood a minimum of 1¼ in. thick; work drawer.

Hand truck: Frame, approximately 48 in. high; at least 14 in. wide; bottom angle nose at least 14 in. by 7 in.; rubber-tired wheels; optional features: Curved brace bars for handling round containers; glides for going up and down steps; handles.

Platform truck: Heavy-duty; metal frame; platform of wood or metal; rubber-tired ball-bearing wheels; 2 swivel and 2 rigid forks; rubber bumpers; handle on swivel end.

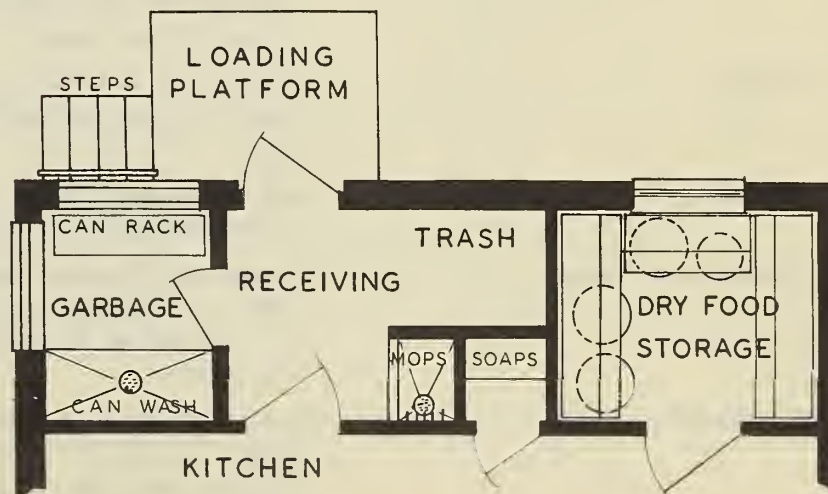
Total Lunches Served Daily

100-200	200-350	350-500	500-750
1	1	1	1
Optional		Optional	
Utilize truck listed in dry food storage area (page 13).			
1	1	1	1
Optional (36 in. by 24 in. by 8 in. to 12 in. high.)	(36 in. by 24 in. by 8 in. to 12 in. high.)	(48 in. by 24 in. by 8 in. to 12 in. high.)	(48 in. by 24 in. by 8 in. to 12 in. high.)



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Figure 1.—Loading platform.



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Figure 2.—Receiving, storage, and maintenance areas.

DRY FOOD STORAGE AREA

PURPOSE.....	To provide security and orderly storage of food not requiring refrigeration; to protect food-stuffs against spoilage or contamination by moisture, rodents, vermin, or heat.
LOCATION.....	Adjacent to kitchen area; convenient to receiving area. (See Figure 2, page 9.)
SPACE.....	Under normal conditions, ½ sq. ft. floor space per meal served daily, based upon two weeks' supply of staples. If school is part of large system with central commissary used for the storage of staples and USDA-donated commodities, area requirements depend on frequency of deliveries from central source. If school buys large quantities of staples at one time or requests large quantities of USDA-donated commodities, additional space may be necessary. (For suggested space requirements for different-sized meal loads, see Figure 4, page 12.)
CONSTRUCTION FEATURES.....	Consult State and local authorities having jurisdiction over applicable regulations.
Floor.....	Slip-resistant; terrazzo, quarry tile, or concrete with integral hardener. Check local regulations regarding floor drains.
Walls and ceiling.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile most desirable; painted plaster or masonry satisfactory; plasterboard or wood not desirable because not vermin-proof; coved bases at floor line. Local regulations may require coved vertical corners.
Doors.....	At least 40 in. wide, heavy-duty; locking from outside but always opening from inside without key. Consider advisability of having one door to kitchen area and one door to receiving area.
Windows.....	Need determined by State and local regulations. If provided, avoid interference with shelving; consider security type sash.
Lighting and wiring.....	Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Approximately 15 foot-candles; normally achieved by about 2 watts per sq. ft. of floor area. Check plan of storage shelving; locate lighting fixtures over aisles.
Ventilation.....	Must be adequate to remove all offensive or dangerous fumes, gases, mists or odors and to prevent condensation on walls, ceiling, equipment, and food. Generally four air changes per hour adequate. Keep area free of uninsulated pipes, water heaters, refrigeration condensing units or other heat-producing devices; room temperature best for dry food storage from 40° F. to 70° F. Insulate exterior walls; vapor-seal walls and floors below ground level.

Positive mechanical ventilation with automatic temperature control and louvered, screened vents to outdoors, for continuous day-and-night operation; or natural ventilation through screened security sash or louvered, screened vents to outdoors.

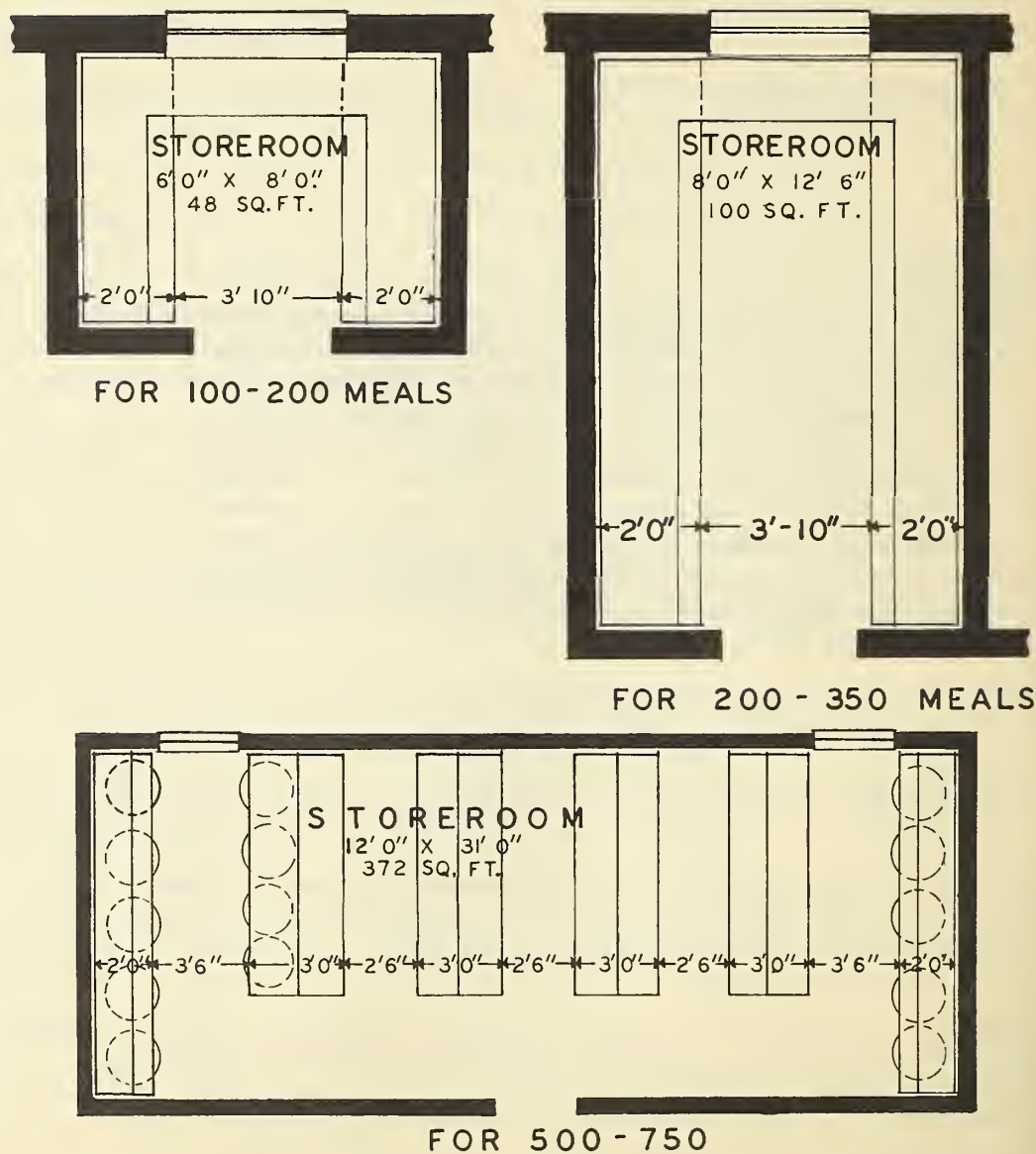
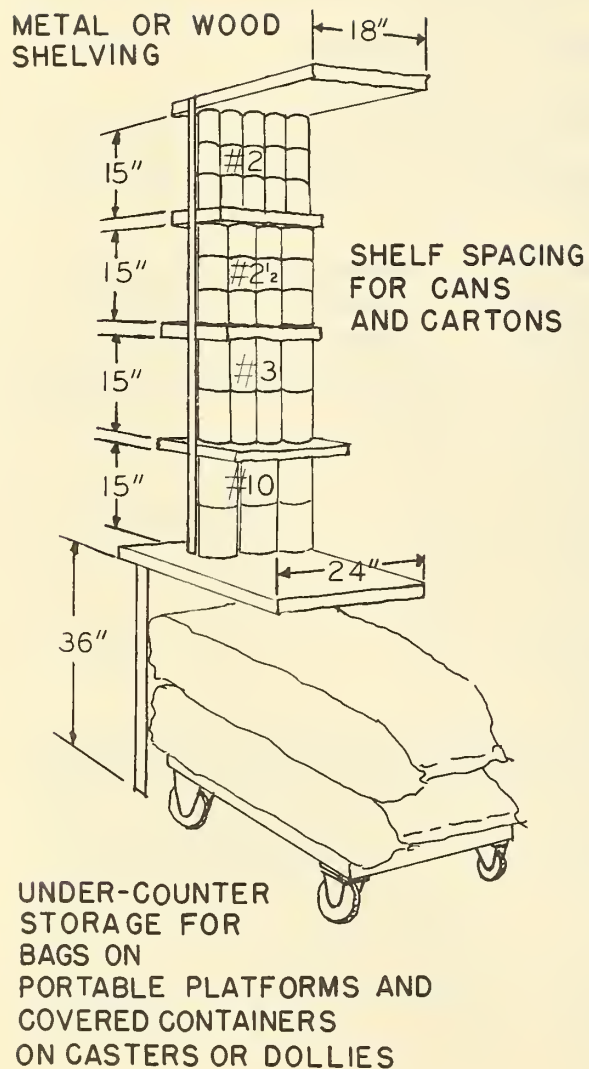
Other considerations----- Avoid exposed conduits, pipes, other surfaces difficult to keep dust-free.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
120-210 sq. ft. shelf area.	210-240 sq. ft. shelf area.	240-384 sq. ft. shelf area.	384-675 sq. ft. shelf area.

EQUIPMENT:

Shelving: Wood or metal; supported by uprights, not more than 48 in. apart; 7 ft. 6 in. maximum practical height; 1 in. vertical adjustment of shelf supports convenient for arranging shelving to accommodate inventory. Allow 1 in. minimum clearance from all walls for cleaning and air circulation; brace well against tipping; standard shelving available, 12 in., 18 in., or 24 in. deep. Provide 36 in. vertical clearance under shelving where portable platforms, cans, and dollies will be located. Aisle space, 30 in. minimum for access to shelving only; 42 in. minimum for movement of portable platforms. (For shelf spacing, see Figure 3, page 12, and Table 1, page 13.)



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Figure 3.—Shelf spacing in storeroom.

Figure 4.—Typical storeroom layouts.

EQUIPMENT—Continued

Portable platforms: (Dollies, pallets, skids). In small sections approximately 24 in. by 36 in.; constructed of heavy-gage steel tubing or wood slats; caster mounting desirable. To be used under bottom shelf or in center of room if space is sufficient.

Food storage containers: 50 or 100 lb. size available. Aluminum, stainless steel, or galvanized iron; with vermin-tight covers; coved corners desirable. Available with or without casters or may be used on dollies.

Grocers' scoops: Corrosion-resistant material; 1 to 1½ lb. capacity.

Thermometers, wall type: Temperature range, minus 20° F. to plus 120° F. in 2°-scale divisions; 12 in. minimum over-all length.

Hand truck: Frame, approximately 48 in. high; at least 14 in. wide; bottom angle nose at least 14 in. by 7 in.; rubber-tired wheels; optional features: Curved brace bars for handling round containers; glides for going up and down steps; handles.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
As needed for storing sacks of potatoes, cartons of canned foods, etc.			
Number depends on number and type of dry ingredients stored, delivery practices, etc.			
One for each container in use.			
One for each storeroom.			
1	1	1	1
Truck may also be utilized in receiving area.			

Table 1.—Can and carton measurements for estimating shelf capacity

Size can	Approximate Diameter of can	Clear height per tier	Cans per carton	Size of carton
	Inches	Inches	Number	Inches
No. 2	3½	5	24	14½ x 10¾ x 10
No. 2½	4	5	24	17 x 12¾ x 10¼
No. 3 (cylinder)	4¼	7½	12	17½ x 13½ x 7¾
No. 10	6¼	7½	6	19 x 12¾ x 7¾

NONFOOD STORAGE AREA

PURPOSE..... To store nonfood items such as soaps, detergents, wetting agents, other cleaning supplies, and paper goods separate from foods and school janitorial supplies. Separate storage of such items needed to prevent absorption of chemical odors by food and to facilitate inventory control.

LOCATION..... Adjacent to receiving area. Convenient to kitchen, dishwashing, and maintenance areas. Separate room desirable. (See Figure 2, page 9.)

Total Lunches Served Daily

	100-200	200-350	350-500	500-750
SPACE.....	15-24 sq. ft.	30-40 sq. ft.	40-60 sq. ft.	60-80 sq. ft.

CONSTRUCTION FEATURES..... Consult State and local authorities having jurisdiction over applicable regulations.

Floor..... Slip-resistant; terrazzo, quarry tile, or concrete with integral hardener.

Walls and ceiling Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile most desirable; painted plaster or masonry acceptable. Plasterboard or wood surfaces most difficult to maintain. Coved bases and coved vertical corners may be required by State or local regulations.

Doors Solid door at least 2 ft. 6 in. wide.

Windows..... Not necessary in this space. If provided, avoid interference with shelving; consider security type.

Lighting and wiring..... Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Approximately 15 foot-candles; normally achieved by about 2 watts per sq. ft. of floor area.

Ventilation..... Natural or mechanical to provide four air changes per hour; 24 hour basis in larger schools.

Other considerations..... Vermin- and rodent-proof. If area contains pipes, panel boards, water tanks, etc. avoid interference with storage area.

EQUIPMENT:

Cabinet: Metal or wood; 36 in. by 24 in. by 72 in. high; locker type; fixed bottom, 4 intermediate shelves; hinged doors.

Shelving: Wood or metal; supported by uprights, not more than 48 in. apart; 7 ft. 6 in. maximum practical height; 1 in. vertical adjustment convenient for arranging shelving to accommodate inventory; 1 in. minimum clearance from all walls for air circulation; brace well against tipping; standard shelving available, 12 in., 18 in., or 24 in. deep.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
2 — or —	—	—	—
60 sq. ft. shelf area.	80-150 sq. ft. shelf area.	150-250 sq. ft. shelf area.	250-300 sq. ft. shelf area.

KITCHEN AREA

PURPOSE.....	To provide a separate area for the preparation of school lunches. Preparation of school lunches in home economics room or gymnasium is not desirable.
LOCATION.....	Adjacent to receiving, dining, and serving areas. Easily accessible to food storage area.
SPACE.....	Approximately 2.0 to 2.5 sq. ft. floor area per meal served daily. Rectangular kitchen provides most efficient use of space; desirable for length to be not more than twice the width. Determine by making functional layout. (See templates provided for this purpose, pages 30 and 31.)
CONSTRUCTION FEATURES.....	Consult State and local authorities having jurisdiction over applicable regulations.
Floor.....	Nonresilient types: Slip-resistant; quarry tile, ceramic tile, or terrazzo; more durable than resilient types. Provide synthetic rubber or vinyl plastic mats at work centers. Resilient types: Slip-resistant; grease, acid, and alkali-resistant; vinyl-asbestos or grease-proof asphalt or rubber tile. Fire-proof slab under ranges and ovens. Provide floor bracing if needed. Solid base or island desirable for ranges; 1 in. to 5 in. high; coved at floor line. Drain recessed in floor away from work areas; pitch $\frac{1}{8}$ in. per foot toward drain, or floor may be level and pitched only for the width of one tile surrounding the drain. Floor areas under and surrounding steamers, kettles, and vegetable peelers should be surrounded by curbs or gutters and drained independently of other floor areas.
Walls.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile most desirable; painted plaster or masonry acceptable for areas not subject to splashing and daily washing; plasterboard or wood not desirable because not vermin-proof. Coved bases at floor line. Local regulations may require coved vertical corners. Metal corner guards, preferably stainless steel, on all projecting corners subject to traffic damage. Sound-proofing between kitchen, dining, and other school areas desirable.
Ceiling.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Non-absorbent, rodent-proof, fire-resistant acoustical type desirable; mechanical suspension system less affected by steam and heat than adhesive attachment of acoustical materials. Painted waterproof, mildew-resistant plaster or cement may be used.
Doors.....	If outside door, use self-closing devices and locks; metal frames desirable. Inside doors, soundproof, with locks. Wire-glass lookouts desirable.

- Windows----- Locate for cross ventilation. Low enough for good ventilation and light but high enough to permit alignment of equipment along outside walls, 48 in. sill height usually adequate. Provide good locks.
- Lighting and wiring----- Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Both natural and artificial lighting desirable. Avoid glare; employees should not work in own shadow. Windows preferable to skylight; if skylights used, heat-absorbing glass desirable. Artificial lighting, incandescent, fluorescent, or a combination of both. Fifty foot-candles on work surfaces, normally achieved by about 5 watts per sq. ft. of floor area; approximately 20 to 30 foot-candles on other areas, normally achieved by about 3 watts per sq. ft. of floor area. Lighting fixtures recessed, surface-mounted or suspended type spaced for even distribution of lighting. Lighting circuit control panel board for all lunchroom areas and power circuit control panel board for kitchen area, readily accessible in kitchen area; flush mounting is desirable. Special wiring and outlets required for heavy-duty equipment. Determine voltage requirements of equipment to be installed and provide wiring and outlets accordingly. Provide spare circuits for future needs. Protect wiring against heat and grease. Locate one duplex outlet, (120-volt, single phase) 6 in. above working level approximately every 10 ft. Do not depend on these duplex outlets for operation of heavy-duty equipment.
- Plumbing----- Cold and hot water connections. Drainage and waste lines with accessible cleanouts. Grease traps, refrigerator drains, and other special connections according to local plumbing codes. Wherever possible, arrange piping to come out of walls instead of floor; at least 8 in. clearance for cleaning floor.
- Heating----- Automatic heating system same as rest of school, but with separate temperature control.
- Ventilation----- Mechanical ventilation separate from that of school system. Free circulation of air at workers' level. If natural ventilation, cross draft is desirable. Built-in vent or vented hood over range and other cooking equipment; approximately 100 cu. ft. exhaust ventilation per minute per sq. ft. of hood opening; filter intake in hood. Two-speed fans desirable. Minimum requirement, six air changes per hour. Supply air may be drawn from dining room or from outside through grill with automatic heating coil.
- Other considerations----- Select harmonious colors and materials for attractive appearance of room. Avoid exposed conduits, pipes, and other surfaces difficult to keep clean. Allow adequate space for cleaning all walls near fixed equipment. Desirable to have 18 in. clearance for cooking equipment; 12 in. clearance for tall equipment such as refrigerators; from 3 in. to 5 in. clearance for rims of work tables and sinks; 3 in. to 5 in. space between adjacent units of equipment. Consult local health authorities regarding clearance for equipment; vestibules for exterior doors; screen doors and windows, blow-down fans, and other means of fly and pest control.

Total Lunches Served Daily

EQUIPMENT:

Cooking and baking equipment.....

Range, commercial type: Available in two or more qualities. Cooking surface may consist of either solid top or open burners or a combination of the two. Heavy-duty, solid top desirable. Range section: 30 in. to 36 in. wide; 34 in. to 42 in. front-to-back; 36 in. high when mounted on legs or masonry base. Actual cooking surface per section approximately 5 to 6 sq. ft. Available with oven or pan storage shelves below cooking top; insulated ovens with automatic heat controls and removable racks.

Oven, baking and roasting: Single or multiple-deck available. Multiple units may consist of bake or roast decks or a combination of the two. Automatic temperature controls at each deck level desirable. Roast deck suitable for either roasting or baking; baking insert shelves also available for some models. Total deck capacity given in multiples of 18 in. by 26 in. bun or sheet pans or equivalent size for roasting pans. Oven space in range may be considered as part of total bake or roast oven capacity specified per meal load.

Steam-jacketed kettle: Aluminum or stainless steel. Full-jacketed shallow type or two-thirds jacketed deep type with safety valve. Tilting or stationary. Tangent draw-off with removable faucet desirable on stationary kettle. Self-contained gas or electric steam generator or direct connection to steam line. Use direct steam connection only if 15 lbs. per sq. in. minimum pressure is available during entire school year. Where used, provide pressure reducing valve.

100-200	200-350	350-500	500-750
The suggested combinations of cooking and baking equipment listed below may be varied to provide equivalent capacities in other combinations depending upon preferred methods of cooking.			
1 section.	2 sections.	2 sections.	2 sections.
3-deck (1 pan per deck) or 2-deck (2 pans per deck)	3-deck (2 pans per deck)	3-deck (2 pans per deck) or 2-deck (4 pans per deck)	2-deck (4 pans per deck) or 2-deck (6 pans per deck) or 3-deck (4 pans per deck)
1 (20-gal.) Optional	1 (20-gal.)	1 (30-gal.) or 2 (20-gal.)	1 (20-gal.) and 1 (30-gal.)
Equivalent capacity in smaller, tilting, table-mounted kettles may be preferred.			

EQUIPMENT—Continued

Cooking and baking equipment—Continued

Compartment steamer: Each compartment minimum 1 bushel capacity. For cooking under pressure (5 lb. or higher). Interior of stainless or galvanized steel; exterior finish of stainless steel or enamel. Safety valves and air vent; safety lock on doors; timer optional. Perforated and solid stainless steel baskets available. Self-contained gas or electric steam generator or direct connection to steam line. Use direct steam connection only if 15 lbs. per sq. in. minimum pressure is available during entire school year. Where used, provide pressure-reducing valve. (Atmospheric type steamer also available.)

Hood or canopy: Over all cooking and baking equipment----

Mechanical equipment:

Cutter or chopper: Electric; table type; revolving bowl, 15 in. to 20 in. in diameter; safety device; bowl and knife guard readily removable for cleaning. Attachments desirable: Grinder, slicer, grater, or shredder.

Mixer: Heavy-duty; bench or floor model. 20-qt. size preferable with 20-qt. and 12-qt. bowls, beaters, and whips; extra bowls as specified. Desirable attachments: Chopper or grinder, vegetable slicer with grater or shredder plate; bowl splash cover.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
1 Compartment or cabinet type (minimum 3 12-in. by 20-in. by 2-in. pan capacity)	2 Compartment	2 Compartment	3 Compartment
See ventilation page 17.			
May use mixer attachment.		1	1
1	1 (With 1 extra 20-qt. bowl.)	2 (With 2 extra 20-qt. bowls.)	2 (With 2 extra 20-qt. bowls.) or 1 60-qt. (with dolly with 30- qt. and 40-qt. adapter bowls and beaters.)

Total Lunches Served Daily

EQUIPMENT—Continued

Mechanical equipment—Continued

Peeler, vegetable: 15 lb. to 20 lb. capacity; portable, bench, pedestal, or cabinet types available; aluminum, cast iron, or steel; abrasive-lined. Integral food-waste disposer or built-in peel trap desirable; or attach strainer basket on waste outlet from peeler.

Slicer: Electric; table or pedestal type available; gravity or mechanical feed; safety device; stainless steel, aluminum, or chip-proof porcelain enamel finish. Small size approximately 6 in. cutting capacity. Large size approximately 9 in. cutting capacity.

Refrigerators-----

Reach-in: Institutional type; minimum size 25 cu. ft. Aluminum, stainless steel, or porcelain enamel interiors and exteriors; vermin-proof insulation; hinged or sliding doors with rot-proof gaskets and plated or stainless steel hardware. Interior fitted with door-operated electric lights, adjustable plated wire shelves or noncorrodible slides for trays. Blower type cooling unit connected to self-contained or remote refrigeration equipment. Optional features: Doors on both sides for pass-through; locking hardware.

100-200	200-350	350-500	500-750
1 optional.	1	1	1
1 small, optional.	1 small.	1 large.	1 large.
The capacities and the combinations of refrigeration facilities suggested below may need to be varied depending on location of school, frequency of delivery, use of central storage, etc. The capacities listed are exclusive of milk storage. (See serving area, page 35.)			
Approximately $\frac{1}{4}$ to $\frac{1}{2}$ cu. ft. per meal served. Consider reach-in, walk-in combination when total capacity exceeds 60 cu. ft.	1 Approx. 30-40 cu. ft. (Consider pass-through type between kitchen and serving areas.)	1 Approx. 40-60 cu. ft.	

EQUIPMENT—Continued

Refrigerators—Continued

Walk-in: Sectional commercial type or built-in as part of building contract. May be several separate rooms with varying temperature and humidity conditions. Vermin-proof insulation on walls, floor, ceiling; interior stainless steel or glazed tile preferable; Portland cement plaster acceptable. Doors on heavy hinges with compression-type gaskets; door latches with integral keyed lock and interior safety latch, which can be opened from inside. Half-height reach-in doors also available; arrange for opening into kitchen area. Interior shelving, wood or metal, portable type desirable. Blower-type refrigeration coils connected to remote refrigeration equipment. Service and maintenance features important as part of purchase contract.

Frozen food storage cabinet: Commercial; upright type preferable; 1 fixed freezing shelf; other shelves adjustable and/or removable for maximum storage.

Refrigerator thermometers:

Refrigerator-freezer: Remote reading type or one designed to hook on shelf or partition; temperature range of at least minus 40° to plus 60° F. in 2°-scale divisions; red-liquid-filled magnifying-glass tube for easy reading; rust-proof scale and frame; scale encased.

Single-pen recording: Designed to record temperature continuously; 7-day revolution chart graduated from at least minus 40° to plus 70° F. in 1°-scale divisions; mercury-actuated thermal system with temperature-compensated smooth capillary; rectangular aluminum dust-proof case; lock in door to prevent tampering.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
May be desirable.		1 Approx. 8 ft. by 10 ft. (May be combination walk-in, reach-in.)	1-2 Approx. 8 ft. by 10 ft. or larger.
Size depends on local needs such as location of school, food purchasing practices, frequency of delivery, use of central storage, etc. One cu. ft. stores approximately 30 to 35 lbs.			
One for each reach-in refrigerator and frozen food cabinet.			
One for each walk-in refrigerator.			

Total Lunches Served Daily

EQUIPMENT—Continued

Sinks (cook's, vegetable preparation, and pot washing): Stainless steel; welded seamless construction; sanitary inside corners (coved); integral rims, splashboards, and drainboards. Bottom sloped to drain through removable stainless steel strainers into waste; exterior-operated lever waste control desirable. Mixing faucet with swing-spouts located for filling each compartment. Mount entire fixture on sanitary metal legs or concealed wall hangers.

Cook's sink: Installed in cook's table or near ranges; inside measurements, approximately 15 in. by 15 in. by 8 in. to 12 in. deep. Long swing-spout mixing faucet mounted 24 in. above range top or over steam-jacketed kettles also desirable.

Vegetable preparation sink: Two or more compartments; each compartment approximately 20 in. by 20 in. by 12 in. to 14 in. deep, inside measurements. Front rim 34 in. to 38 in. above floor. Two drainboards, at least 24 in. long, draining into sink.

Pot sink: Two or three compartments as required by local and State regulations; each compartment not smaller than 24 in. wide, 24 in. front-to-back; 12 in. to 16 in. deep, inside measurements. Sink bottom at least 24 in. above floor; front rim 36 in. to 40 in. above floor. Splashboard on rear, 10 in. to 15 in. high, turned back 2 in. on top and sides to conceal water supply pipe; high faucet mounting, 20 in. minimum clearance under faucet to sink bottom. Thermostatically-controlled booster heater or auxiliary heating cycle such as side-arm heater for maintaining 180° F. water in final sanitizing compartment. Two drainboards at least 24 in. long, draining into sink. Grease overflow compartments and food waste disposers optional accessories.

Hand lavatory: Stainless steel, vitreous china, or acid-resisting porcelain enamel on cast iron; standard size; mixing faucet with foot-operated control valves; stops and trap. Provide soap dispensers and towel dispensers or automatic hand dryers.

100-200	200-350	350-500	500-750
—	—	1	1
1 Optional.	1	1	1
1	1	1	1
May be installed in kitchen or in dishwashing unit, convenient to cooking area.			
Consult local authorities regarding number and location required.			

Total Lunches Served Daily

EQUIPMENT—Continued

Tables (baker's, cook's, and vegetable preparation): 34 in. to 36 in. working height; 24 in. to 30 in. wide if used on one side only; 42 in. to 48 in. wide if used from both sides; center overhead shelf if double service type. If table use requires cutlery, provide drawer, approximately 20 in. by 20 in. by 5 in. deep. Space under table top may be enclosed storage cabinet, lower metal shelf between table legs, or open to floor for storing portable bins, trucks, etc. Mount tables on tubular metal legs with sanitary adjustable feet or on casters with brakes. Consult local authorities for approval before ordering wood top tables.

Baker's table: 3 in. thick laminated maple strip top, stainless steel top, or 1½ in. thick polished marble top. Base open for storing portable bins.

Cook's table: Stainless steel or laminated maple strip top, one or two drawers. Overhead utensil rack optional; approximately 7 ft. 6 in. above floor. Lower shelf or storage cabinet.

Vegetable preparation table: Stainless steel or laminated maple strip top; two drawers; removable cutting board; lower shelf or storage cabinet.

Utility trucks: For all-purpose use in kitchen. Stainless steel or aluminum, approximately 38 in. long, 22 in. wide, 36 in. high; two or three decks; rubber-tired ball-bearing wheels; rubber bumpers; two rigid and two swivel wheels preferable, or four swivel wheels if desired.

Racks:

Cooling: Portable; 4 to 6 slatted shelves or angle slides.

Utensil: Portable; 4 to 6 slatted shelves.

Other:

Fire blanket: Fireproof woven asbestos approximately 48 in. by 72 in. for smothering grease or personal clothing fires. Generally stored in roll on wall brackets or in cabinet with breakable glass front panel.

Fire extinguisher: Type approved by State and local fire regulations.

100-200	200-350	350-500	500-750
1 5 ft. to 6 ft. Optional.	1 6 ft. to 8 ft.	1 6 ft. to 8 ft.	1 6 ft. to 9 ft.
1 5 ft. to 6 ft.	1 6 ft. to 8 ft.	1 6 ft. to 8 ft.	2 6 ft. to 9 ft.
1 5 ft. to 6 ft.	1 6 ft. to 8 ft.	2 6 ft. to 8 ft.	2 6 ft. to 9 ft.
1	1-2	2-3	2-3
	Number depends on local needs, amount of baking done, etc. —	May be desirable.	
	Number depends on layout of kitchen and State and local fire regulations.		
	Size and number depend on layout of kitchen and State and local fire regulations.		

Total Lunches Served Daily

EQUIPMENT—Continued

Small Equipment:

Beater: Rotary; manually operated; commercial type.

Boards:

Cutting, hardwood; approximately 10 in. by 16 in. by 1¼ in.

Pastry, hardwood; approximately 18 in. by 24 in. by 1 in.

Bowls: Mixing, aluminum or stainless steel.

3-4 qt.

6-8 qt.

12-16 qt.

20-25 qt.

Brushes: Various types and sizes available; corrosion-resistant handle.

Pastry

Vegetable

Chopper or grinder, food: Manually operated; corrosion-resistant cutters with variable type blades; approximately 3-lb. capacity.

Cleaver: Light weight, ¾ to 1 lb.; approximately 6 in. blade; hardwood handle.

Clock: Wall type

Colander: Aluminum or stainless steel; approximately 11- to 16-qt. capacity.

Cutlery: Blades of high carbon content or stainless steel; full tang construction desirable; minimum, 2 rivets; two-piece hardwood handles or equivalent construction.

Boning, approximately 6-in. flexible narrow blade

Boning, approximately 6-in. stiff wide blade

French cook's, approximately 10-in. blade

Paring, spear or clip point; approximately 2½- to 3-in. blade

Peeler, hand type; floating blade

Slicer, hotel or roast approximately 12-in. blade

100-200	200-350	350-500	500-750
1	2	2	2
1	2	2	2
(If no cook's table with maple top.)			
1	1	1	1
(If no baker's or cook's table with maple top.)			
4	4	2	2
2	2	4	4
2	2	4	4
1	1	2	2
2	2	2	2
2	2	3	3
Optional		Optional	
Optional		Optional	
As needed depending on layout of work areas.			
1	1	2	2
1	1	2	2
2	2	3	4
2	4	5	6
2	3	3	3
1	1	2	2

EQUIPMENT—Continued

Small Equipment—Continued

Cutlery—Continued

Spatula: Regular flexibility; approximately 8- to 10-in.

Narrow blade-----

Wide blade-----

Spreader, flexible, approximately 3- to 4-in. blade-----

Steel, sharpening, approximately 12 in. long; magnetized--

Turner, "hamburger", stainless steel; approximately 3- to 4½-in. flat area-----

Turner or offset spatula, stainless steel; approximately 10-in. by 1½-in. blade-----

Cutlery rack: Type suitable to operation-----

Cutter, butter: Corrosion-resistant steel wires; 48 cuts per pound.

Cutter, salad: Rotary type; manually operated; slicing, shredding, or grating cone cutters.

Fork, pot: 2-tined; forged; hardwood handle or equal construction; approximately 14 in.-----

Garbage can and cover: Galvanized; 15- to 25-gallons; available with or without casters or may be used on dollies.

Grater, hand: Heavy-duty; corrosion-resistant metal; fine and coarse.

Juice extractor: Aluminum or stainless steel; press or rotary type; manually operated.

Ladles: Stainless steel

For portioning. Long handle. Size:

¼ cup (2 ounces)

½ cup (4 ounces)

¾ cup (6 ounces)

1 cup (8 ounces)

For general use. Short handle. Size:

2 to 4 cups (16 to 32 ounces)-----

Masher, potato: Heavy-duty-----

Total Lunches Served Daily

100-200	200-350	350-500	500-750
1	1	2	2
1	1	2	2
May be desirable if sandwiches are made.			
1	1	1	1
2	2	3	3
2	2	3	3
Number and size depend on layout of work areas.			
Optional.		Optional.	
Optional.		Optional.	
2	2	2	2
One for each preparation area except where food waste disposer is easily accessible.			
Optional.		Optional.	
Optional.		Optional.	
Utilize ladles listed in serving area (page 36.)			
1	1	2	2
1 (If no power mixer.)	—	—	—

Total Lunches Served Daily

EQUIPMENT—Continued

Small Equipment—Continued

Measures: Aluminum or stainless steel; seamless; liquid and dry type available. If only one type used, liquid type desirable.

1 cup size graduated in $\frac{1}{4}$ cups.....	2	2	3	3
1 qt. size graduated in cups.....	2	2	3	3
2 qt. size graduated in cups.....	2	2	3	3
1 gal. size graduated in quarts.....	2	2	3	3

Molder, hamburger: Aluminum; manually operated; fastened to table; approximately 7 in. by 14 in.; 6 patties per pound.

Openers:

Can: Table model; heavy-duty; adjustable; parts removable for cleaning.

Can and bottle: Small, hand type.....

Pots and Pans:

Bake pans: Aluminum or stainless steel; seamless; 2 drop handles; depth 2 in. to 3 in.; approximately 22 in. length by 20 in. width; or use serving counter pans, approximately 20 in. length by 12 in. width; or size suitable for maximum use of oven.

Bread pans: Aluminum, stainless steel, or tinned steel; seamless; 4 in. depth, approximately 10 in. length by 4 to 5 in. width.

Bun or sheet pans: Aluminum, stainless steel, or tinned steel; seamless; 1 in. depth; approximately 26 in. length by 18 in. width; or size suitable for maximum use of oven. Aluminum available in both natural and anodized finish.

Double boiler: Aluminum or stainless steel; semi-heavy; flat bottom insert; fitted cover. Insert and outer pot may be used separately.

12-qt. insert; 12-qt. pot.....	1	1	1	1
20-qt. insert; 20-qt. pot.....	—	1	1	1

100-200	200-350	350-500	500-750
2	2	3	3
2	2	3	3
2	2	3	3
2	2	3	3
Optional.		Optional. Automatic type may be desirable.	
1	1	1	1-2
Additional number depends on layout of work areas.			
1	2	2	2
4	6	8	8
Optional.		Optional.	
6-12	6-12	12-24	12-24
1	1	1	1
—	1	1	1

EQUIPMENT—Continued

Small Equipment—Continued

Pots and Pans—Continued

Muffin pans: Aluminum or stainless steel; commercial weight; 12 cups per frame; approximate cup size, top diameter 2¾ in., depth 1½ in.

Pie pans: Aluminum anodized finish, stainless steel, or tinned ware; 8- to 10-in. diameter.

Roast pans: Aluminum or stainless steel; seamless; 2 drop handles; depth 5 to 6 in.; 20- or 22-in. length by 16- or 20-in. width; or size suitable for maximum use of oven.

Sauce pans: Aluminum or stainless steel; commercial weight; long handle; approximately 4-qt.

Sauce pots: Aluminum or stainless steel; commercial weight; 2 loop handles; approximately 20 qt; approximately 14 in. diameter.

Utility or dish pans: Aluminum or stainless steel; commercial weight; with or without handles; 14 to 27 qts.

Pot holders or oven mitts-----

Rolling pin: Heavy-duty; length 14 in., diameter 4 in.; revolving handles.

Saw, butcher's: Hardwood or metal handle; 20- to 24-in. blade.

Scales: Table model to meet requirements for commercial type (family type scale not suitable); approximately 25- to 30-lb. capacity; ¼- to ½-ounce graduations; platter top desirable.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
Optional.		Optional.	
Optional.		Optional.	
1	2	2	3
1	1	2	2
2	2	3	3
Optional.		Optional.	
Number depends on layout of work areas.			
1	1	1	1
Not needed if all meat is received boned or cut in portion sizes.			
1	1	1	1
Additional number depends on layout of work areas—desirable in cooking, baking, and salad preparation areas.			

EQUIPMENT—Continued

Small Equipment—Continued

Scoops:

Dishers for portioning: Stainless steel; wood or plastic handle. Size:

No. 6 ($\frac{3}{8}$ cup).

No. 8 ($\frac{1}{2}$ cup).

No. 10 ($\frac{3}{4}$ cup).

No. 12 ($\frac{1}{2}$ cup).

No. 16 ($\frac{3}{4}$ cup).

No. 20 ($3\frac{1}{2}$ tablespoons).

No. 24 ($2\frac{1}{2}$ tablespoons).

No. 30 ($2\frac{1}{2}$ tablespoons).

No. 40 ($1\frac{1}{2}$ tablespoons).

Dry ingredients: Aluminum or stainless steel; 1 qt-----

Scraper, bowl: Flexible nonmetallic blade, 4 to 6 in. wide----

Shakers: Aluminum or stainless steel; approximately 3 in. diameter, 4 in. depth.

Shears, kitchen: Steel; 7 to 8 in.-----

Sieve, flour: Aluminum; 16 to 20 in. diameter-----

Slicer, egg: Aluminum, chromium, or stainless steel-----

Spoons:

Measuring: Aluminum or stainless steel; graduated, $\frac{1}{4}$ teaspoon to 1 tablespoon-----

Mixing: Stainless steel; 11 to 13 in. long.

Solid-----

Slotted or perforated-----

Stools: Metal or wood-----

Strainer, china cap: Stainless steel; 10 to 12 in. diameter----

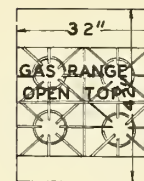
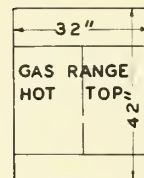
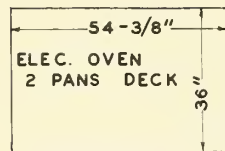
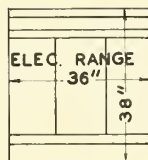
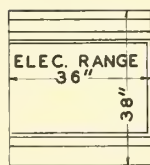
Trays: Aluminum or stainless steel; approximately 12 by 16 in. or 14 by 18 in.

Whip: Corrosion-resistant wire; 14 to 20 in.-----

Total Lunches Served Daily

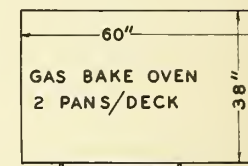
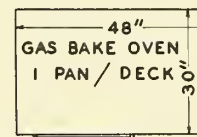
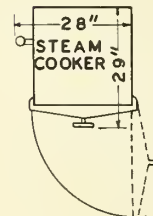
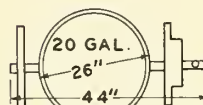
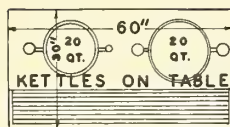
100-200	200-350	350-500	500-750
At least one of each size. Desirable for portioning meat patties, some vegetables, salads, muffins, drop cookies, etc.			
One for each container of dry ingredients, i. e. flour, sugar, beans, etc.			
2	2	4	4
Desirable for dispensing salt, flour, sugar, etc.			
1	2	2	2
1	1	2	2
Optional.		Optional.	
2 sets for each work area.			
4	6	8	8
2	4	6	6
Additional number depends on layout of work areas.			
One for each kitchen worker.			
1	1	2	2
4	4	6	6
2	2	3	3

SCALE TEMPLATES OF KITCHEN EQUIPMENT

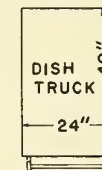
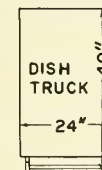
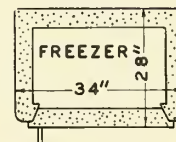
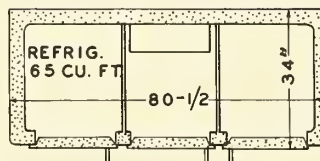
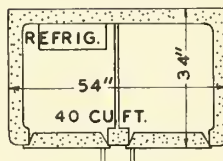
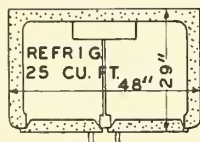


ELECTRIC COOKING EQUIPMENT

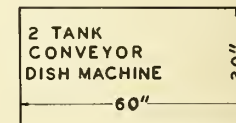
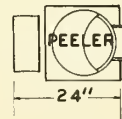
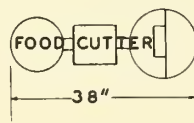
GAS COOKING EQUIPMENT



STEAM COOKING EQUIPMENT

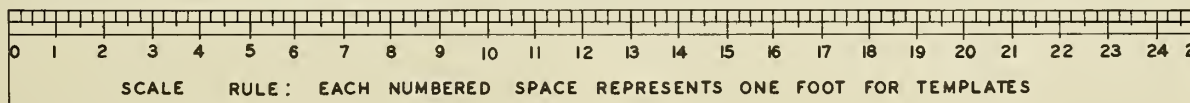
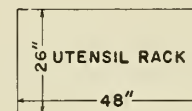
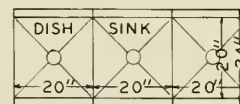
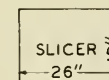
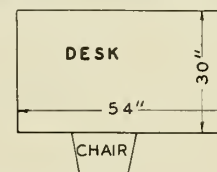
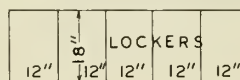
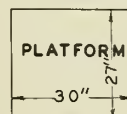
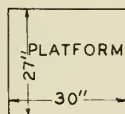
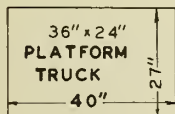
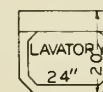
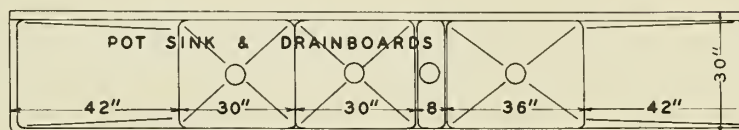
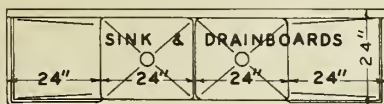
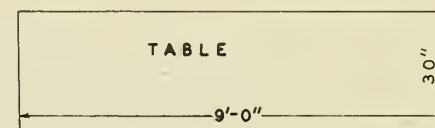
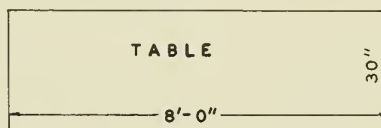
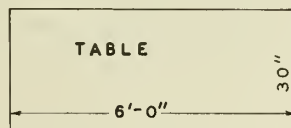
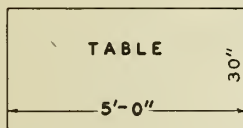
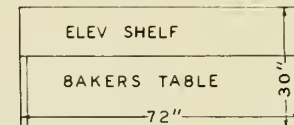
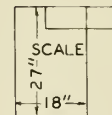
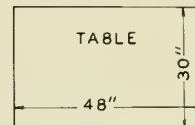
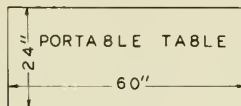
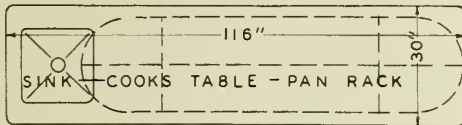


PORTABLE REACH-IN. REFRIGERATORS & CABINETS



KITCHEN MACHINES

SCALE TEMPLATES OF KITCHEN EQUIPMENT





EQUIPMENT—Continued

Small Equipment—Continued

Thermometers:

Oven: Minimum temperature range, 200° to 600° F. in 10°- scale divisions

Roast meat: Stainless steel stem; hermetically sealed dial; minimum temperature range, 140° to 200° F. in 5°- scale divisions; movable metal index

Timer: Range of 60 minutes; marked in one-minute-scale divisions.

Tongs: Aluminum, chromium, or stainless steel; 9 to 12 in. --

Total Lunches Served Daily

100-200	200-350	350-500	500-750
1	1	1	1
2	2	4	4
2	2	4	4
Additional number depends on layout of work areas.			
Utilize tongs listed in serving area (page 37).			

SERVING AREA

PURPOSE.....	To provide a quick and orderly method of portioning and serving school lunches; to protect foods from oral infection and other unsanitary conditions; to conserve nutritive value and flavor of food.
LOCATION.....	May be within kitchen area, in a separate room, or in the dining area if not used as multi-purpose room.
SPACE.....	Approximately 1.0 sq. ft. floor area per meal served daily. This area may be added to recommended kitchen or dining area if function is included with that area.
CONSTRUCTION FEATURES.....	Consult State and local authorities having jurisdiction over applicable regulations.
Lighting and wiring.....	Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Lighting over serving surfaces approximately 50 foot-candles; normally achieved by about 5 watts per sq. ft. of floor area.
Other considerations.....	Provide same general features of construction as kitchen area.

Total Lunches Served Daily

EQUIPMENT:

Serving Counter: 28 to 30 in. wide; approximately 34 in. working height; stainless steel top preferable; substructure may be metal, wood, or masonry, mounted on solid base or on legs, at least 6 in. high; lower shelves, cabinets, or open space underneath for dish trucks, conforming to State and local regulations. Available as manufactured product or may be locally built. Portable counters also available.

Tray section: Portable platform or integral part of counter; approximately 24 in. high, 18 in. long.

Hot food section: For main dishes and vegetables. Four rectangular openings to accommodate four 12 in. by 20 in. pans of different depths; or combinations of fractional-size pans of different depths with the aid of pan adapter bars; may be heated by electricity, gas, or direct connection to steam line; use direct steam connection only if steam is available during entire school year; "dry type" preferable; easier to install.

100-200	200-350	350-500	500-750
1 12-ft. to 15-ft.	1 15-ft. to 20-ft.	2 15-ft. to 20-ft.	2-3 15-ft. to 20-ft.
Length includes space for trays, tableware, cashier or checker, and hot and cold foods exclusive of milk.			
One for each serving counter if trays are used.			
1 Section	1 Section	1 Section per counter.	1 Section per counter.
or			
Use recessed counter top, approximately 3 to 5 ft. long for cooking pans. (Line recessed area with fire-proof material.)			

EQUIPMENT—Continued

Serving Counter—Continued

Cold food section: For breads, salads, fruits, and other desserts. Plain counter top, elevated shelves, or refrigerated unit.

Protector or "sneeze" guard: For protecting unwrapped foods from air-borne bacteria. Entire length of hot and cold sections of counter.

Tableware section: Approximately 20 in. counter space or use part of tray section to accommodate removable cylinder or individual pans with half-covers for sanitation.

Checker or cashier's section: Approximately 24 in. long with end of counter recessed for knee space. Bottom shelf may act as footrest or may be omitted. Locked cash drawer optional. *Note:* If mechanical register is desired, provide electric connection.

Tray rail or slide: Preferably metal; solid or tubular; approximately 12 in. wide. Approximately 28 in. high for primary and elementary schools; 32 in. high for junior high and combined high and elementary schools; 32 to 34 in. high for high schools.

Back counter: Behind serving counter aisle. Convenient for auxiliary work areas. May include pass-through hot food cabinet and pass-through refrigerator for receiving foods from kitchen.

Milk Service-----

Cooler: For individual 8 oz. containers. Preferably self-service, horizontal chest, mechanically cooled. May include automatic elevating device to keep containers at top of cooler.

Dispenser: For bulk milk in 3-, 5-, or 10-gallon containers. Capacity: 1, 2, or 3 cans. Self-contained mechanical cooling equipment. Automatic measuring device preferable. 8-oz. serving of milk required for Type A lunch.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
4 ft. to 6 ft.	6 ft.	6 ft. per counter.	6 ft. per counter.
Comply with State and local regulations.			
One section for each serving counter.			
One section for each serving area. May be separate table with seat.			
Entire length of counter.			
Optional.		Optional.	
Needed in addition to other refrigeration. Usually located adjacent to serving counter.			
1 cu. ft. net capacity for 50 to 75 half-pints of milk, depend- ing on size and shape of containers.			
Check State and local regulations governing use.			

EQUIPMENT—Continued

Small Equipment:

Trays: Various qualities and materials available; 12 by 16 in., or 14 by 18 in. desirable sizes.

Dinnerwear: Heavy-weight, rolled edge, vitrified china; plastic, not affected by boiling water or chlorine solutions; or heat-resistant glass.

Plates, dinner: 8 to 9 in. overall diameter; or compartment type.

Plates, bread and butter: Approximately 6 in. overall diameter.

Soup bowls: Approximately 10-oz. capacity.-----

Fruit dishes: Approximately 4 oz.-----

Cups: Approximately 8 oz.; optional.-----

Tableware: Knives, forks, teaspoons, and soup spoons. One piece construction; stainless steel or triple-plate silverware.

Serving implements:

Fork, serving: 2-tined; forged; hardwood handle or equivalent construction; approximately 10 or 12 in.

Ladles: Stainless steel; long handle. Size:

¼ cup (2 ounces)-----

½ cup (4 ounces)-----

¾ cup (6 ounces)-----

1 cup (8 ounces)-----

Total Lunches Served Daily

100-200	200-350	350-500	500-750
If tray service is used, quantity to equal meal load preferable. Two-thirds of total meal load may be adequate if trays are washed and reused during serving period.			
Quantity to equal meal load preferable. Two-thirds of total meal load may be adequate if dinnerwear is washed and reused during serving period. Paper cups and containers of various sizes also available in suitable finish for hot and cold foods.			
As specified above.			
As specified above.			
As specified above.			
As specified above.			
As specified above.			
Quantity to equal meal load.			
1-2	2-3	3-4	4-5
1-2	2-3	2-4	2-4
1-2	2-3	2-4	2-4
1-2	2-3	2-4	2-4
1-2	2-3	2-4	2-4

EQUIPMENT—Continued

Small Equipment—Continued

Serving implements—Continued

Scoops (dishers for portioning):

Stainless steel; wood or plastic handle. Size:

No. 6 ($\frac{3}{8}$ cup).

No. 8 ($\frac{1}{2}$ cup).

No. 10 ($\frac{3}{4}$ cup).

No. 12 ($\frac{1}{2}$ cup).

No. 16 ($\frac{1}{4}$ cup).

No. 20 ($3\frac{1}{2}$ tablespoons).

No. 24 ($2\frac{3}{4}$ tablespoons).

No. 30 ($2\frac{1}{2}$ tablespoons).

No. 40 ($1\frac{3}{4}$ tablespoons).

Spoons, serving: Stainless steel; 11 to 13 in. long.

Solid.....

Slotted or perforated.....

Tongs: Aluminum, chromium, or stainless steel; 9 to 12 in.

Turners or offset spatulas: Stainless steel; approximately 10 by $1\frac{1}{2}$ in. blade.

Dispensers:

Napkin: Corrosion-resistant material.....

Straw: Corrosion-resistant material.....

Pitchers: Aluminum or stainless steel; 4 to 5 qt.

Shakers: Salt and pepper, aluminum or stainless steel.

For serving counter or dining tables.

Other:

Cash register: Desirable to use type with keys to register types of lunches served.

Checking machine: From 1 to 5 or more keys; tape receipt type available.

Menu board: With plastic letters and figures.....

Total Lunches Served Daily

100-200	200-350	350-500	500-750
At least one of each size for each serving counter.			
2-3	2-3	3-4	4-6
2-3	2-3	3-4	4-6
2-3	2-3	3-4	4-6
2-3	2-3	3-4	4-6
At least one for each serving line. At least one for each serving line.			
Optional.		Optional.	
Optional.		Optional.	
Usually not needed in elementary schools. If used, one for each serving line.			
—	One for each serving line. Locate a few feet ahead of change maker or cash register.		
Optional.		Optional.	

DINING AREA

PURPOSE.....	To provide a healthful area with proper furniture for pupils to eat school lunches.
LOCATION.....	Adjacent to kitchen and serving areas. Convenient access from outside and from school corridors. <i>Note:</i> Some school systems are successfully operating portable serving equipment which is brought from kitchens to small dining rooms located near classrooms, or directly into classrooms where children are served their meals.
SPACE.....	Approximately 10 to 12 sq. ft. floor area per person seated at one time. If multipurpose room, add areas required for uses other than dining. Rectangular room generally more adaptable to seating arrangements. Gymnasium not desirable for daily lunchroom use. (See Table 2, page 40, and Figure 5, page 41.)
CONSTRUCTION FEATURES.....	Consult State and local authorities having jurisdiction over applicable regulations.
Floor.....	Slip-resistant; quarry tile, terrazzo, or resilient grease-proof flooring desirable. Hard maple or oak flooring satisfactory when properly maintained. Plain smooth concrete with integral hardener acceptable if integral coloring pigment also added to floor. Coved bases at walls essential for cleanliness.
Doors.....	Not less than 36 in. wide for one-way traffic; 60 in. wide for two-way traffic. Locate for orderly travel of students from serving area to dining tables, and from tables to dish scraping area, then to exits. Check local regulations for required fire exits, screened openings, fly and other pest controls. Doors to serving and kitchen areas need sound-proofing if dining area is multipurpose type. Provide means of locking kitchen and serving areas from dining area.
Windows.....	Same sizes and openable areas as required for school classrooms. All openings screened with noncorrodible materials; sturdy latches on screens and sash. Consider use of blinds, shades, draperies or curtains.
Lighting and wiring.....	Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Both natural and artificial lighting desirable. Avoid glare; provide lighting same as in classrooms if for multipurpose use. Minimum 15 foot-candles; normally achieved by about 2 watts per sq. ft. of floor area. Other electric outlets may be required for fans, drinking fountains, and portable serving units.
Walls.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile easiest to maintain; washable paper or paint on hard plaster satisfactory; exposed painted masonry block units with rough surface texture acceptable for upper wall surfaces above tile or plastic wainscoting. Wood and plasterboard surfaces not rodent-proof; most difficult to maintain, easily damaged, and require frequent painting.

CONSTRUCTION FEATURES—Continued

Ceiling-----	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Non-absorbent, rodent-proof, fire-resistant, acoustical type desirable. May be prefabricated acoustical units on mechanical suspension system or painted acoustical plaster on metal lath. Exposed concrete or painted hard plaster less desirable, but acceptable.
Plumbing-----	Water and drainage connections for drinking fountains.
Heating-----	Automatic heating system; same temperature control as school classrooms, but valved separately to permit independent operation.
Ventilation-----	Natural or mechanical, same as school classrooms. Cross-ventilation or exhaust fan desirable in warm climates.
Other considerations-----	Select harmonious colors and materials for attractive appearance of room. Avoid exposed conduits, pipes, and other surfaces difficult to decorate or keep clean. If multipurpose room, provide adequate storage adjacent to dining area for equipment, tables, etc.

EQUIPMENT:

Tables, wood or metal; tops, heat- and stain-proof; for seating 4, 6, or 8 pupils; self-leveling device is desirable; 23, 26, or 29 in. high available. Folding or in-wall tables may be desirable for multipurpose use; dollies for moving folding tables from multipurpose room.

Chairs, wood or metal; 11 in., 13 in., 15 in., or 17 in. high available. Use with tables approximately 12 in. higher than chair seat. Approximately 4½- to 6-in. knee space; posture chairs with rubber bumpers; shelf underneath, optional. Folding posture chairs may be desirable for multipurpose use; portable racks for chair storage.

Racks and shelves; for coats and books-----

Water fountain, protected angle-jet type; approximately 24 in. high for primary grades; 36 in. high for others. Electric cooling, optional.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
Allow approximately 24 in. of space at table edge for each pupil seated. For example, a 72 in. by 30 in. table will seat 6 pupils; a 96 in. by 30 in. table will seat 8 pupils; no seating at ends. Use table height appropriate for age level patronizing lunchroom. (See Table 2, page 40, and Figure 5, page 41.)			
One per person for largest serving period. Use chair height appropriate for age level patronizing lunchroom.			
As needed.		As needed.	
Optional.		Optional.	
Locate near exits.			

Table 2.—Suggested areas for dining room seating

Seating capacity at one time	48	128	160	180	252	320	320	360	384
Length of dining room (L).....	28'-0"	61'-0"	75'-0"	75'-0"	100'-0"	140'-0"	75'-0"	140'-0"	88'-0"
Width of dining room (W).....	24'-0"	24'-0"	24'-0"	32'-0"	32'-0"	24'-0"	50'-0"	32'-0"	50'-0"
Front aisle (FA).....	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"
Rear aisle (RA).....	2'-6"	3'-0"	4'-0"	4'-0"	3'-0"	4'-0"	4'-0"	4'-0"	4'-0"
Center aisles (CA).....	3'-0"	3'-0"	3'-0"	4'-0"	4'-0"	3'-0"	4'-0"	4'-0"	4'-0"
Side aisles (SA).....	2'-6"	2'-6"	2'-6"	3'-0"	3'-0"	2'-6"	3'-0"	3'-0"	3'-0"
Table spacing (TS).....	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"
Table length (TL).....	8'-0"	8'-0"	8'-0"	6'-0"	6'-0"	8'-0"	8'-0"	6'-0"	8'-0"
Number of rows of tables.....	3	8	10	10	14	20	10	20	12
Number of tables each row.....	2	2	2	3	3	2	4	3	4
Total net dining room area (sq. ft.).....	672	1,464	1,800	2,400	3,200	3,360	3,750	4,480	4,400
Dining room area per seat (sq. ft.).....	14	11.43	11.25	13.33	12.69	10.50	11.72	12.04	11.46

(Note: 2 linear feet table allotted for each seat)

The above chart and the accompanying illustration (Figure 5) show the factors to be considered in determining space requirements for dining room seating. End of table seating is not considered, as this is not an economical use of space. However, if there is end table seating on one side of a center aisle, the width of the aisle will need to be increased by two feet. If there is end table seating on both sides of a center aisle, the width of the aisle will need to be increased by three feet. Generally, it is desirable to have tables at right angles to the principal sources of daylight so that no one faces directly into the light. The total floor area required for a given number of seats may be reduced by eliminating side aisles in narrow dining areas and by grouping large tables end-to-end in center sections. However, the lack of center and/or side aisles slows down the process of dish return and increases the hazards of fire or emergency evacuation. Therefore, local and State regulations should be checked in this respect.

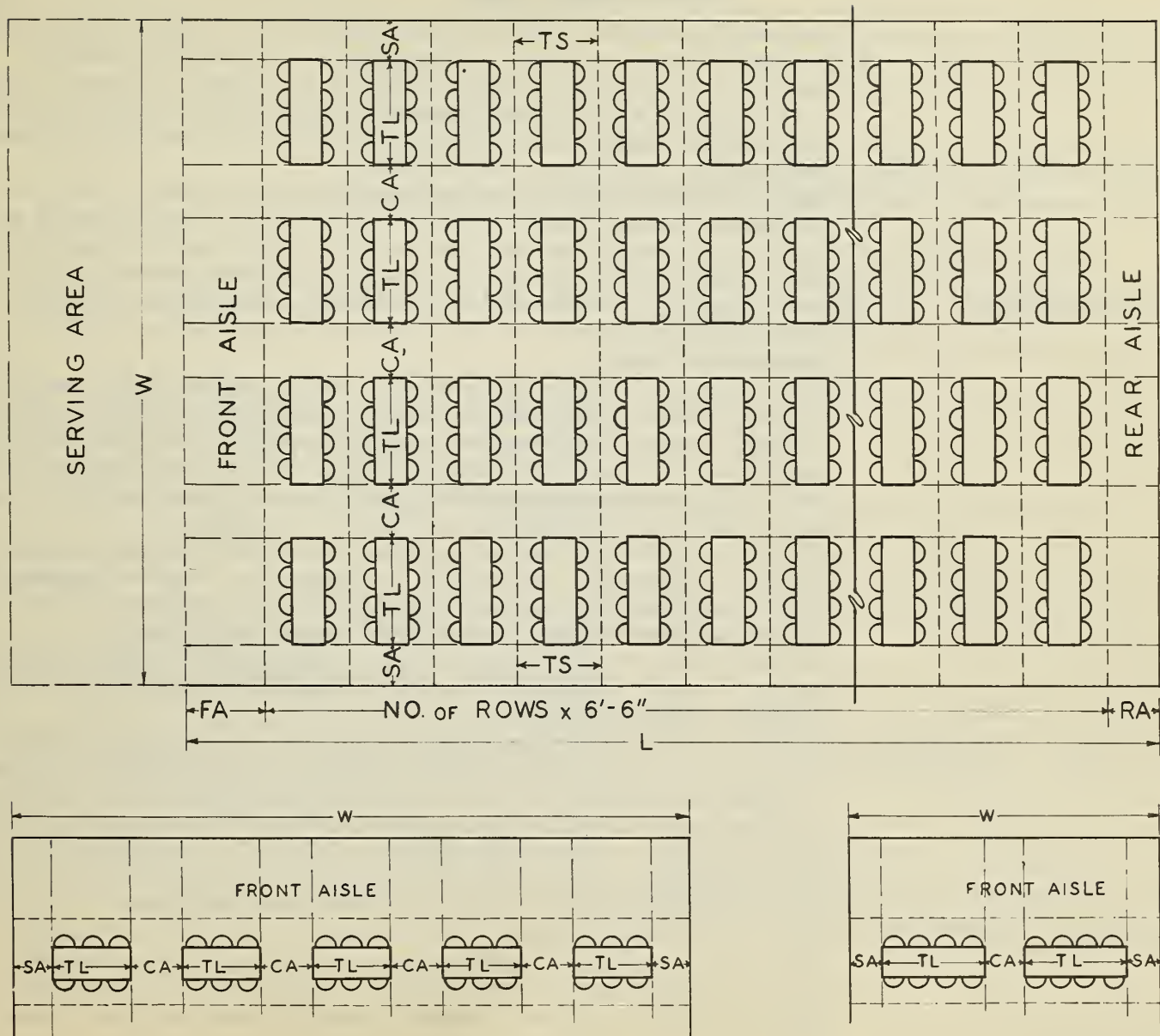


Figure 5.—Dining room seating.

DISHWASHING AREA

PURPOSE.....	To sanitize dinnerware; to collect and dispose of garbage and trash from dining area; to reduce breakage losses and other losses of dinnerware caused by improper handling.
LOCATION.....	Adjacent to dining area, near exit from dining area to corridors or outdoors. Arrange location of dish return so as to eliminate cross-traffic interfering with incoming students. Separate room simplifies ventilation and noise control. May be in kitchen with sound and ventilation baffles.
SPACE.....	Floor area determined by type and size of dishwashing equipment, table space required for peak-load periods, and traffic patterns in and out of area. Approximately 60 to 80 sq. ft. for unit with compartment sink; 105 to 180 sq. ft. for unit with single tank dishwashing machine; 180 to 210 sq. ft. for unit with two-tank dishwashing machine. (See Figure 6, page 48.)
CONSTRUCTION FEATURES.....	Consult State and local authorities having jurisdiction over applicable regulations.
Floor.....	Slip-resistant; terrazzo, quarry tile, or concrete with integral hardener. Check local regulations regarding floor drains.
Walls.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile most desirable; painted plaster or masonry acceptable for areas not subject to splashing and daily washing; plasterboard or wood not desirable. Coved bases at floor line. Local regulations may require coved vertical corners. Metal corner guards, preferably stainless steel, on all projecting corners subject to traffic damage. Sound-proofing between dishwashing area and other areas desirable.
Ceiling.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Non-absorbent, rodent-proof, fire-resistant acoustical type desirable; mechanical suspension system less affected by steam and heat than adhesive attachment of acoustical materials. Painted waterproof, mildew-resistant plaster or cement may be used.
Windows.....	If provided, locate for cross ventilation. Low enough for good ventilation and light but high enough to permit alignment of equipment along outside walls, 48 in. sill height usually adequate. Provide good locks.
Soiled dish return to dishwashing room.	Extension of soiled dish table through wall, with raised rim on dining area side so that spillage will not drip on floor. Height of sill about 36 in. above finished floor level (approximately 1 in. higher than working level of dish tables and dishwashing machine). Height of opening only about 18 in. to reduce transmission of noise and conceal unattractive appearance of soiled dish table. Length of opening not less than 24 in., preferably 54 in. so two rows of students can deposit trays or dishes simultaneously. Opening suited to size of equipment if conveyor mechanism is used to bring soiled dishes from dining area.
Lighting and wiring.....	Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Both natural and artificial lighting desirable. Avoid glare; employees should not work in own shadow. Artificial lighting, incandescent or fluorescent. Fifty foot-candles on all work surfaces; normally achieved by about 5 watts per sq. ft. of floor area.

CONSTRUCTION FEATURES—Continued

- Plumbing----- Cold and hot water connections; 180° F. water for final rinse; about 20 to 25 pounds water flow pressure; provide flow control valve in line to final rinse near dishwashing machine and install a line strainer before the valve. Grease trap, floor drains, and other special connections according to local plumbing codes. Water softening equipment may reduce operating costs in some localities.
- Ventilation----- Mechanical ventilation separate from that of school system. Direct flue connection from dishwashing machine usually more effective than vented hood. Exhaust fan desirable. Free circulation of air at workers' level. If natural ventilation, cross draft is desirable.

Total Lunches Served Daily

EQUIPMENT:

Soiled dish table: Stainless steel top; 24 in. to 36 in. wide; tubular legs of galvanized pipe or stainless steel; adjustable stainless steel feet; tubular cross rails at least 8 in. above floor. Shelf underneath for storage of dish racks. Proper drainage of table top essential to prevent waste water from entering dishwashing sink or machine; may be accomplished by recessed drain or prewash unit. Length as needed to provide space for scrapping and prewashing of dishes.

Prewash unit: Dishes prewashed under water spray to remove all food particles; may be flushed individually before placing in dish rack, or placed in rack after scrapping food waste, then flushed over sink or recessed drain in soiled dish table by overhead spray on flexible mounting controlled by foot pedal or self-closing hand valve; strainers and traps for salvaging lost silverware. Provide 22 in. minimum table top space between prewash unit and dishwashing machine to accommodate dish rack.

Disposers, food waste: Electrically driven machines designed to pulverize food wastes so product will be completely water-borne to public sanitary disposal plant. Install in conjunction with prewash unit.

100-200	200-350	350-500	500-750
1	1	1	1
1	1	1	1
1 Optional	1 Optional	1 Optional	1 Optional
Consult State and local sanitation and plumbing codes regarding installation.			

Total Lunches Served Daily

EQUIPMENT—Continued

Dishwashing sink: Stainless steel; three or more compartments desirable; each compartment 18 to 24 in. wide, 18 to 24 in. front-to-back, and 12 to 14 in. deep, inside measurements. (Size and number of compartments depend on State and local regulations.) Sink bottom at least 24 in. above floor; front rim 36 to 38 in. above floor. Sanitary inside corners, coved; integral channel or rolled front and exposed end rims; integral splashboard on rear, 10 to 15 in. high, turned back 2 in. on top and sides to conceal water supply pipes; combination mixing faucets with swing-spout to reach each compartment. Sink bottom sloped to drain through removable stainless steel strainer into waste. Exterior-operated lever waste control desirable. Provide drainboard or table surfaces at each end of sink, with rims and splashboard matching sink. Mount entire fixture on metal sanitary legs or concealed wall hangers. Provide institutional type thermometer with adjustable clip to fasten on sink; stainless steel frame; approximately 16 in. long; minimum temperature range, minus 60° F. to plus 360° F. Thermostatically controlled booster heater or auxiliary heating cycle such as side-arm heater needed for 180° F. rinse water in last compartment of sink.

Dishwashing machines:

Single-tank, stationary rack, door type: Stainless steel; either straight-through or corner-type; manually operated sliding doors or rolling hoods; preflushed racked dishes pushed through machine by hand; 140° F. wash water containing detergent recirculated through spray nozzles above and below racked dishes. Fresh 180° F. rinse water with timer control, provided from above and below by separate set of spray nozzles. Thermometers to indicate temperature of wash and rinse water. Booster heater or auxiliary heating cycle needed for final 180° F. rinse water at 1½ gallons per 20 by 20 in. rack; 15-lb. flow pressure. Auxiliary equipment available from detergent manufacturer: Detergent feeder, wetting agent injector in final rinse water. Various types of detergents available for china, plastic, and other materials.

	100-200	200-350	350-500	500-750
1	—	—	—	—
or				
1	1	—	—	—
		or		

Total Lunches Served Daily

EQUIPMENT—Continued

Dishwashing machines—Continued

Single-tank rack conveyor type: Stainless steel; open ends with waterproof curtains, preflushed racked dishes carried through machine by timed automatic conveyor; 140° F. wash water containing detergent recirculated by motor-driven pump through spray nozzles above and below racked dishes; fresh 180° F. rinse water provided from above and below by separate set of spray nozzles. Thermometers to indicate temperatures of wash and rinse water. Booster heater or auxiliary heating cycle needed for final 180° F. rinse water in amounts specified by State and local authorities, generally 6 gallons per minute at not less than 15-lb. flow pressure. Optional features: Inspection and clean-out doors on front; plastic-coated racks; stainless steel frame and enclosing panels for base of machine. Auxiliary equipment available from detergent manufacturer: Detergent feeder; wetting agent injector in final rinse water. Various types of detergents available for china, plastic, and other materials.

Two-tank rack conveyor type: Stainless steel; open ends with waterproof curtains; preflushed racked dishes carried through machine by timed automatic conveyor; 140° F. wash water containing detergent recirculated by motor-driven pump through spray nozzles above and below racked dishes in first (wash) compartment. Pumped rinse water recirculated at 170° F. exposing 20 by 20 in. rack to 11½ gallons of recirculated rinse water at not less than 15-lb. flow pressure. Final fresh water rinse, 180° F. from nozzles above and below dish rack in three wide streams full width of rack; 4 gallons per minute at not less than 15-lb. flow pressure. Thermostatically-controlled temperatures, with indicating thermometers for each washing cycle. Booster heater or auxiliary heating cycle needed for final 180° F. rinse water, 4 gallons per minute at not less than 15-lb. flow pressure. Auxiliary features: Inspection and cleanout doors on front; detergent feeder and wetting agent injector in final rinse water. Various types of detergents for china, plastic, and other materials available from detergent manufacturer.

100-200	200-350	350-500	500-750
—	1	1 <i>or</i>	—
—	—	1	1

EQUIPMENT—Continued

Dish racks, including tableware racks: Size suitable for machine, approximately 20 by 20 in. Corrosion-resistant material. Basic set usually sold with machine; extra racks may be purchased.

Dish baskets: Size suitable for sink; not larger than 14 by 14 in. by 8 in. deep because of loaded weight; loop handles to project above water level. Need varies according to State and local sanitizing regulations.

Clean dish table: Stainless steel top; 24 to 36 in. wide; tubular legs of galvanized pipe or stainless steel; adjustable stainless steel feet; tubular cross rails at least 8 in. above floor. Shelf underneath for storage of dish racks. Proper drainage of table top essential. Length varies with size of operation, dishwashing practices, shape of unit, etc. For table adjacent to dishwashing sink, provide a minimum of 6 ft. for air drying of dishes. For table adjacent to dishwashing machine, provide a minimum of 8 ft. for air drying of dishes. To estimate length, allow approximately 22 in. per dish rack. Integral dish rack slide behind dishwashing machine to return racks to soiled dish table is desirable.

Wetting agent dip tank: Heated container for dipping tableware after washing for instant and even drying without water spots. Also acts as sanitizing solution. May be a portable tank or built as integral part of clean dish table, approximately 18 in. long, 12 in. wide, 12 in. deep. Thermostatically-controlled heating element. Dipping baskets of corrosion-resistant material.

Water heaters: To heat general water supply to approximately 140° to 160° F.; rustproof construction. Hot water supply for lunchroom separate from rest of school. Booster or auxiliary heating cycle needed for 180° F. sanitizing rinse water.

Booster or auxiliary heaters: To heat 140° F. water to 180° F.; rustproof construction; gas or electric unit; installed off floor near dishwashing unit.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
4-5	5-7	8-10	10-12
Number of racks needed will vary according to dishwashing practices.			
4-5 Optional.	—	—	—
1	1	1	1
Desirable if dishwashing machine does not have wetting agent injector on final rinse line. Also desirable for manual type dishwashing.			
Secure assistance from local health department, utility company, or heating engineers for method of supplying 180° F. water in quantities and at pressures recommended by National Sanitation Foundation, Standard No. 3.			
As required by dishwashing equipment.			

Total Lunches Served Daily

EQUIPMENT—Continued

Dish trucks: For transporting clean dishes to serving area and for storing dishes under serving counter where shelves are not provided. Stainless steel; rubber-tired ball bearing wheels; rubber bumpers; two swivel and two rigid wheels preferable or four swivel wheels if desired. Size will vary depending on use.

Garbage cans and covers: Galvanized; 15- to 25-gallon; available with or without casters, or may be used on dollies.

Brushes:

Pot brush: Stiff bristle. Available with short or long handle and with different fibers. Brush face, approximately 5 by 6 in.

Wire brush: Fine steel bristle; approximately 8 by 2 in.-----

Scrapers: For use in scrapping soiled dishes. Flexible nonmetallic blade; approximately 4 to 6 in. wide.

100-200	200-350	350-500	500-750
1	1-2	2-3	2-3
Number given is for transporting dishes. If used for storage of dishes, number will need to be increased. Utility trucks listed in kitchen area may also be utilized in this area.			
Number will vary with method of scrapping—whether or not waste food and paper are separated, and whether or not a food waste disposer and incinerator are used.			
1-2	1-2	2-3	3-4
1-2	1-2	2-3	3-4
2-3	2-3	3-4	4-5

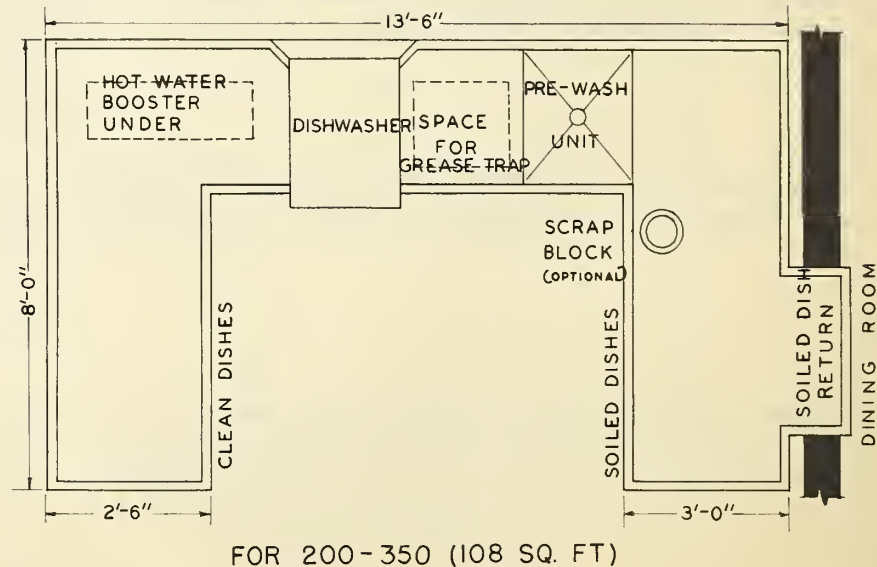
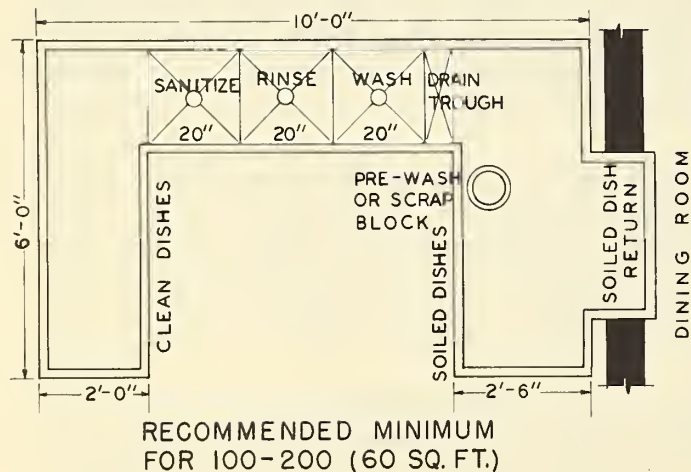
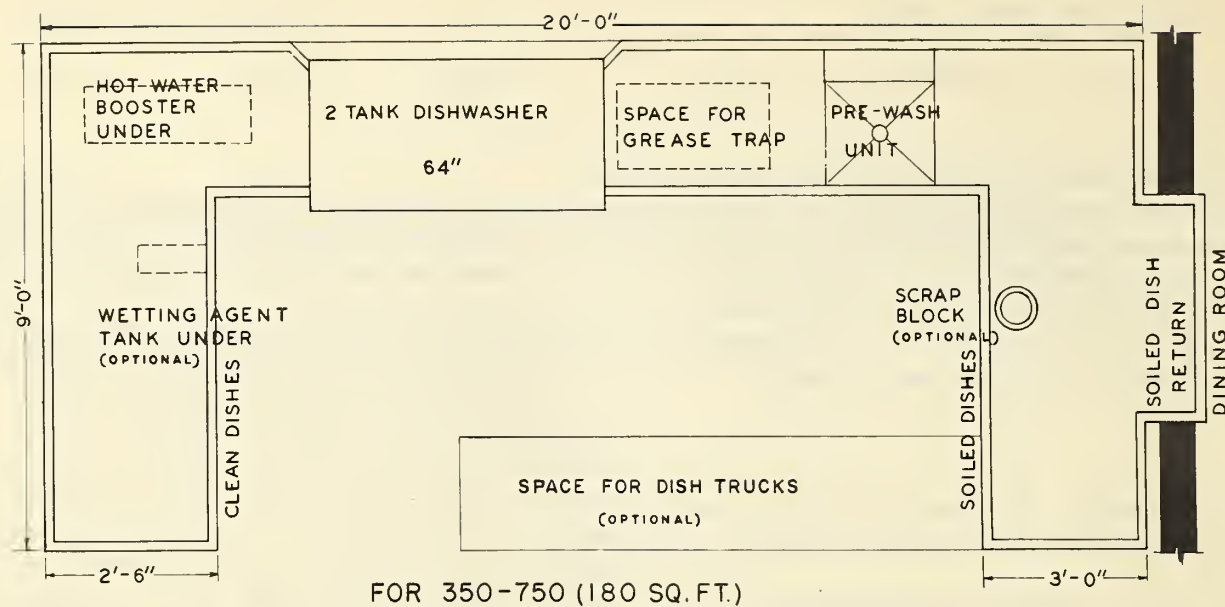


Figure 6.—Typical dishwashing layouts.

DN-877

MAINTENANCE AREA

PURPOSE----- To provide convenient facilities for garbage, trash, and housekeeping equipment.

LOCATION----- Near service entrance. Garbage and trash areas opening on to loading platform, convenient to kitchen and dishwashing areas. Mop area opening into receiving area inside building. Separate rooms desirable for each function. (See Figure 2, page 9.)

SPACE----- Garbage Area—Separate room desirable for can washing and for temporary storage of empty cans and garbage. Reduce space if food waste disposer or incinerator are used.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
30-48 sq. ft.	30-48 sq. ft.	48-60 sq. ft.	60-75 sq. ft.

Trash Area—Separate room desirable for temporary storage of empty crates, cans, and waste goods. Reduce space if incinerator is used.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
May use garbage area.		20-30 sq. ft.	30-40 sq. ft.

Mop Area—Separate room desirable.

Total Lunches Served Daily

100–200	200–350	350–500	500–750
24 sq. ft.	24 sq. ft.	30–40 sq. ft.	30–40 sq. ft.

CONSTRUCTION FEATURES-----	Consult State and local authorities having jurisdiction over applicable regulations.
Floor-----	Slip-resistant; concrete with integral hardener or quarry tile. Floor pitched to drain.
Walls and ceiling-----	If separate room, use same finish as dishwashing area.
Doors-----	Provide durable, reinforced, tight-fitting screened doors, minimum 3 ft. wide; opening outward with self-closing devices. Kick plates on both sides of door, at least 6 in. high.
Lighting and wiring-----	Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Minimum 10 foot-candles; normally achieved by about 1 watt per sq. ft. of floor area. Lighting fixtures of weatherproof type desirable.
Plumbing-----	Cold and hot water outlets and hose connection for garbage area; faucets high enough to clear cans. Drain connections and spray nozzle for can washing in garbage area.
Ventilation-----	If an enclosed room is used, provide screened grills or windows; exhaust fan desirable for garbage room.
Other considerations-----	Consult local authorities regarding fly and pest control, i. e. screened doors, refrigeration for garbage area, blowdown fans, etc.

EQUIPMENT:

Garbage and Trash Areas:

Garbage cans and covers: Galvanized; 15- to 25-gallons; available with or without casters or may be used on dollies.

Racks, broom and mop: Stationary type-----

Shelves in trash area: Preferably metal; slatted; approximately 18 in. wide.

Mop Area:

Brooms:

Push broom: Approximately 14-, 16-, or 18-in. width; long handle.

Upright broom: Natural fiber; heavy-duty; long handle.

Brushes:

Scrub brush (deck): Heavy-duty; approximately 10 by 3 in.

Buckets:

Scrub bucket: Galvanized; bale handle-----

Mop bucket: Double tank; galvanized; on casters; 16- to 44-qt. capacity; squeeze-type detachable wringer desirable.

Dust pans: Heavy-duty; 12 to 16 in. pan-----

Floor scrubbing and polishing machine: Heavy-duty; electric; concentrated weight; 12 to 15 in.; vacuum pickup type convenient.

Mops:

Dust mop: Treated; heavy-duty; 16 to 24 in.-----

Wet mop: Heavy-duty; string or sponge; detachable handle.

Racks, broom and mop: Stationary type-----

Shelves: Preferably metal; for cleaning supplies and tools----

Total Lunches Served Daily

100-200	200-350	350-500	500-750
Number depends on method of disposal. Use of food waste disposer and incinerator reduces number needed.			
1	1	1	1
For temporary storage of baskets, crates, etc. Number depends on local needs.			
1	2	3	3
Optional.		Optional.	
2	2	3	3
1	1	1	2
1	1	1	2
Needed if floor scrubbing and polishing machine is not available.			
1	1	2	2
Use machine provided for other areas of building.			1
Optional.		Optional.	
1	1	2	2
Extra mop heads as needed.			
1	1	2	2
12 sq. ft. shelf area.	12 sq. ft. shelf area.	18 sq. ft. shelf area.	24 sq. ft. shelf area.

EQUIPMENT—Continued

Mop Area—Continued

Sinks:

Mop sink: Stainless steel, acid-resistant porcelain enamel on cast iron, or vitreous china; approximately 22 by 20 in. by 14 or 16 in. deep, inside measurements; front rim approximately 30 in. high; mixing faucet with bale support; trap.

Stool with folding step ladder: Metal or wood; safety-type; approximately 24 in. high.

Tool kit: Claw hammer, pliers with wire cutter, screw driver, and crate or carton opener.

Total Lunches Served Daily

100–200	200–350	350–500	500–750
1	1	1	1
1	1	1	1
1 each.	1 each.	1 each.	1 each.

OFFICE AREA

PURPOSE..... To provide suitable area for planning menus and preparing market orders; making work schedules; keeping inventories and other school lunch records; and for conducting conferences with employees.

LOCATION..... Adjoining or near kitchen. Easily accessible to delivery entrance. Separate room desirable.

SPACE.....

Total Lunches Served Daily

100-200	200-350	350-500	500-750
48-60 sq. ft.	48-60 sq. ft.	48-60 sq. ft.	48-60 sq. ft.

CONSTRUCTION FEATURES..... Consult State and local authorities having jurisdiction over applicable regulations.

Lighting and wiring..... Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Approximately 50 foot-candles; normally achieved by about 5 watts per sq. ft. of floor area.

Other considerations..... Provide same general features of construction as kitchen area. Sectional office partitions with upper clear glass panels desirable to separate office from kitchen area.

Total Lunches Served Daily

EQUIPMENT:

Desk, standard: approximately 54 in. with pedestal base; may accommodate typewriter; file drawers.

Desk light

Chairs

Telephone: Extensions as required for convenience

File cabinet: Legal size; 3 or 4 drawers

File box: (For 5 in. by 8 in. recipe cards)

Typewriter; table with drawer; and chair

Adding machine

Purse lockers or cabinet

Waste basket

100-200	200-350	350-500	500-750
1	1	1	1-2
1	1	1	1-2
As needed.		As needed.	
1	1	1	1
1 <i>or</i> may use desk drawer.	1 <i>or</i> may use desk drawer.	1	1-2
As needed.		As needed.	
Optional.		Optional.	
Optional.		Optional.	
Desirable if employees' locker room is not adjacent to kitchen area.			
As needed.		As needed.	

LOCKER AND TOILET AREA FOR EMPLOYEES

PURPOSE.....	To provide facilities for lunchroom employees separated from other school facilities; to promote more rigid enforcement of State and local health regulations.
LOCATION.....	Near employees' entrance to kitchen area. Separate rooms for men and women if both sexes are employed.
SPACE.....	Toilet facilities space as required by State and local regulations. Locker room space approximately 3½ sq. ft. floor area per lunchroom employee. Allow an additional 20 sq. ft. if cot is used in women's locker room.
CONSTRUCTION FEATURES.....	Consult State and local authorities having jurisdiction over applicable regulations.
Floor.....	Ceramic tile, terrazzo, quarry tile, or resilient tile; coved bases.
Walls and ceiling.....	Light in color, smooth, impervious to moisture, easy to wash and keep in good repair. Glazed tile most desirable; painted plaster or masonry acceptable. Plasterboard or wood surfaces most difficult to maintain.
Doors.....	Two with automatic closers; vestibule between toilet and kitchen areas (not required if opening onto corridor); consult local authorities. Locks limiting use to employees are suggested.
Windows.....	Required by many building codes for light and ventilation; mechanical ventilation and artificial lighting subject to State and local regulations.
Lighting and wiring.....	Comply with National Electrical Code requirements (an American Standard) together with other local requirements. Minimum 10 foot-candles; normally achieved by about 1 watt per sq. ft. floor area.
Plumbing.....	Facilities for toilets as required by State and local regulations. Cold and hot water mixing faucets for lavatories.
Ventilation.....	Four air changes per hour desirable. Natural ventilation through outside window or vent; otherwise, exhaust fan desirable.
Other considerations.....	No uncleanable space beneath or behind lockers.

Total Lunches Served Daily

100-200	200-350	350-500	500-750
One for each worker.			
Consult local authorities regarding number required.			
Consult local authorities regarding number required.			
As needed		As needed	
1	1	1	1
As needed		As needed.	
Optional		Optional	
Optional		Optional	

EQUIPMENT:

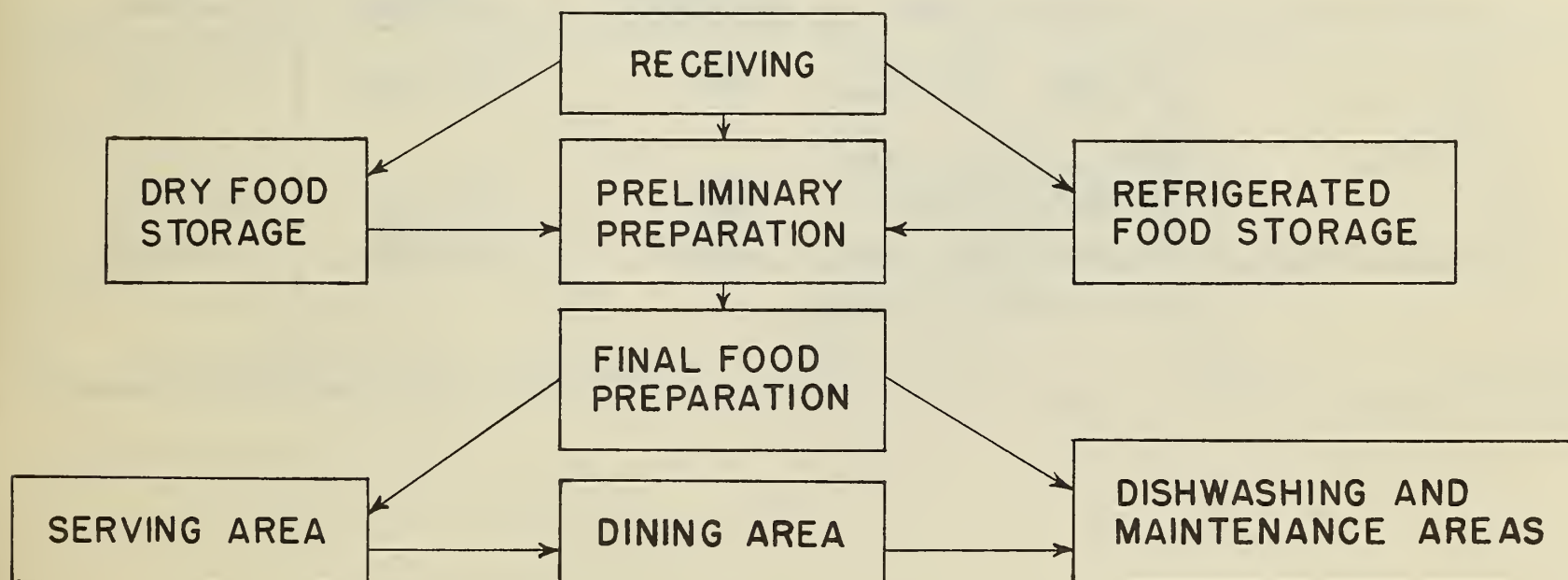
Lockers: Metal; with locking device-----
 Hand lavatory: Vitreous china, or acid-resisting porcelain enamel
 on cast iron; standard size; mixing faucet; stops and trap.
 Provide soap dispensers and towel dispensers or automatic hand
 dryers.
 Toilet: To comply with State and local regulations-----
 Chairs or bench-----
 First aid cabinet: (May be in kitchen area or office.)-----
 Mirror, approximately 18 by 24 in-----
 Cot: (For women's locker room)-----
 Showers-----

EFFICIENT ARRANGEMENT OF LUNCHROOM SPACE AND EQUIPMENT

Efficient arrangement of the school lunchroom and its kitchen is of major importance in keeping the program an economical operation. By orderly arrangement of functions and equipment, and by planning the shortest, most direct routes for supplies and functions, workers save steps and time. If routes of operation are confused with back-tracking and cross-travel, then accidents, costly mistakes, and delays may result.

The length of the food preparation route depends upon: (1) The size of the lunchroom area; (2) the arrangement of equipment; (3) distance from receiving and storage areas to the kitchen; and (4) the distance between the kitchen preparation areas and the serving units.

The following diagram illustrates the interrelationship of areas within the school lunch facility, suggesting the flow of food and supplies from receiving and storage to preparation and serving areas. It also shows the relationship of the dining area to the serving and dishwashing areas.



EVALUATING SCHOOL LUNCH FACILITIES

The value of this booklet will be enhanced if it is used as a standard for evaluating existing facilities as well as for checking plans for proposed lunchrooms. In making an evaluation, the areas within the school lunch facility should be compared with the corresponding areas as described in this book. The index will serve as a convenient guide in making such comparisons.

School lunch facilities should be examined and appraised at regular and frequent intervals. The following chart is a suggested record form of such evaluations, and of improvements as they are accomplished. The date of the original suggestion for an improvement and the signature or initials of the person making a suggestion will add interest and personal pride in the record.

Lunchroom Areas	Improvements Needed	Person Recommending Improvement	Date Recommended	Date Completed
<i>Receiving</i>	<i>Better lighting</i>	<i>BH</i>	<i>1/26/56</i>	<i>3/5/56</i>
<i>Kitchen</i>	<i>Floor drain near</i>			
	<i>potato peeler</i>	<i>FM</i>	<i>3/5/56</i>	<i>4/9/56</i>
<i>Dishwashing</i>	<i>Ventilation for</i>	<i>JH</i>	<i>4/9/56</i>	<i>7/18/56</i>
	<i>dishwashing machine</i>			

Table 3.—Summary of space recommendations for school lunchroom areas
(See text for full explanation)

Designation of area	Text reference page	Total lunches served daily							
		100-200		200-350		350-500		500-750	
		Min. sq. ft.	Max. sq. ft.	Min. sq. ft.	Max. sq. ft.	Min. sq. ft.	Max. sq. ft.	Min. sq. ft.	Max. sq. ft.
Receiving area:									
Loading platform	7	60	60	60	60	80	100	100	160
Receiving area inside building	7	32	48	48	60	48	60	60	80
Dry food storage area	10	50	100	100	175	175	250	250	375
Nonfood storage area	14	15	24	30	40	40	60	60	80
Kitchen area	16	200	500	400	875	700	1,250	1,000	1,875
Serving area	34	100	200	200	350	350	500	500	750
Dishwashing area	42	60	180	105	180	105	210	180	210
Maintenance area:									
Garbage area	49	30	48	30	48	48	60	60	75
Trash area	49					20	30	30	40
Mop area	50	24	24	24	24	30	40	30	40
Office area	53	48	60	48	60	48	60	48	60
Locker and toilet area for employees	55	33	33	48	48	60	60	76	76
Total—Kitchen and service areas		652	1,277	1,093	1,920	1,704	2,680	2,394	3,821
Dining area, based on 2 seatings daily	38	500	1,200	1,000	2,100	1,750	3,000	2,500	4,500
Gross recommended areas		1,152	2,477	2,093	4,020	3,454	5,680	4,894	8,321
Area per lunch served		11.5	12.4	10.5	11.5	9.9	11.4	9.8	11.1

Table 4.—Summary of mechanical services for school lunchroom equipment

(See text for full explanation)

Item	Drainage			Water			Electric motor	Fuel	
	Direct	Indirect	Through grease trap	140° F.	180° F.	Cold		Gas	Elec- tricity
Kitchen Area:									
Oven, deck.....								X or X	
Range.....								X or X	
Steam jacketed kettle.....			X	X	or	X		X or X	
Steam cooker.....			X	X	or	X		X or X	
Drip pan or floor depression.....			X						
Cutter or chopper.....							X		
Mixer.....							X		
Vegetable peeler.....	X or X					X	X		
Slicer.....							X		
Frozen food cabinet.....		X				X ¹	X		
Reach-in refrigerator.....		X				X ¹	X		
Walk-in refrigerator.....		X				X ¹	X		
Cook's sink.....	X			X		X			
Hand lavatory.....	X			X		X			
Pot sink.....			X	X	X	X		X or X	
Vegetable sink.....	X			X		X			
Serving Area:									
Heated unit.....		X		X				X or X	
Refrigerated unit.....		X				X ¹	X		
Milk cooler.....		X					X		
Milk dispenser.....		X					X		
Dishwashing area:									
Prewash unit.....			X	X		X	X		
Food waste disposer.....	X					X	X		
Dishwashing machine.....			X	X	X		X	X or X	
Dishwashing sink.....			X	X	X	X		X or X	
Silver dip tank.....	X				X			X or X	

¹ Required only for water-cooled compressors.